ENGINEERING NEWS-RECORD

★
★

A McGRAW-HILL PUBLICATION

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UNIVERSITY MICROFILMS

built this BIG ONE for Bethel....

Reducing pressure variations, meeting peak loads and supplying increased population with adequate water supply is becoming a big problem to many municipal water systems throughout the nation. Such problems are being successfully combated by structures such as the large 2,500,000-gal. Horton® radial-cone bottom elevated tank shown above that was erected at Bethel, Pennsylvania, for the South Pittsburgh Water Company.

Chicago Bridge & Iron Company builds radial-cone bottom elevated tanks in standard capacities of 3,000,000-gals. Smaller ellipsoidal-bottom structures are built in sizes from 15,000 to 500,000-gals. Information, estimates or quotations on the Horton elevated tank that can help improve your municipal water system may be obtained by writing our nearest office. There is no obligation on your part.

Atlanta, 3 ..... 2125 Healey Building
Birmingham, 1 ..... 1520 North 50th Street
Boston, 10 ..... 1012-201 Devonshire Street
Chicago, 4 ..... 2101 McCormick Building
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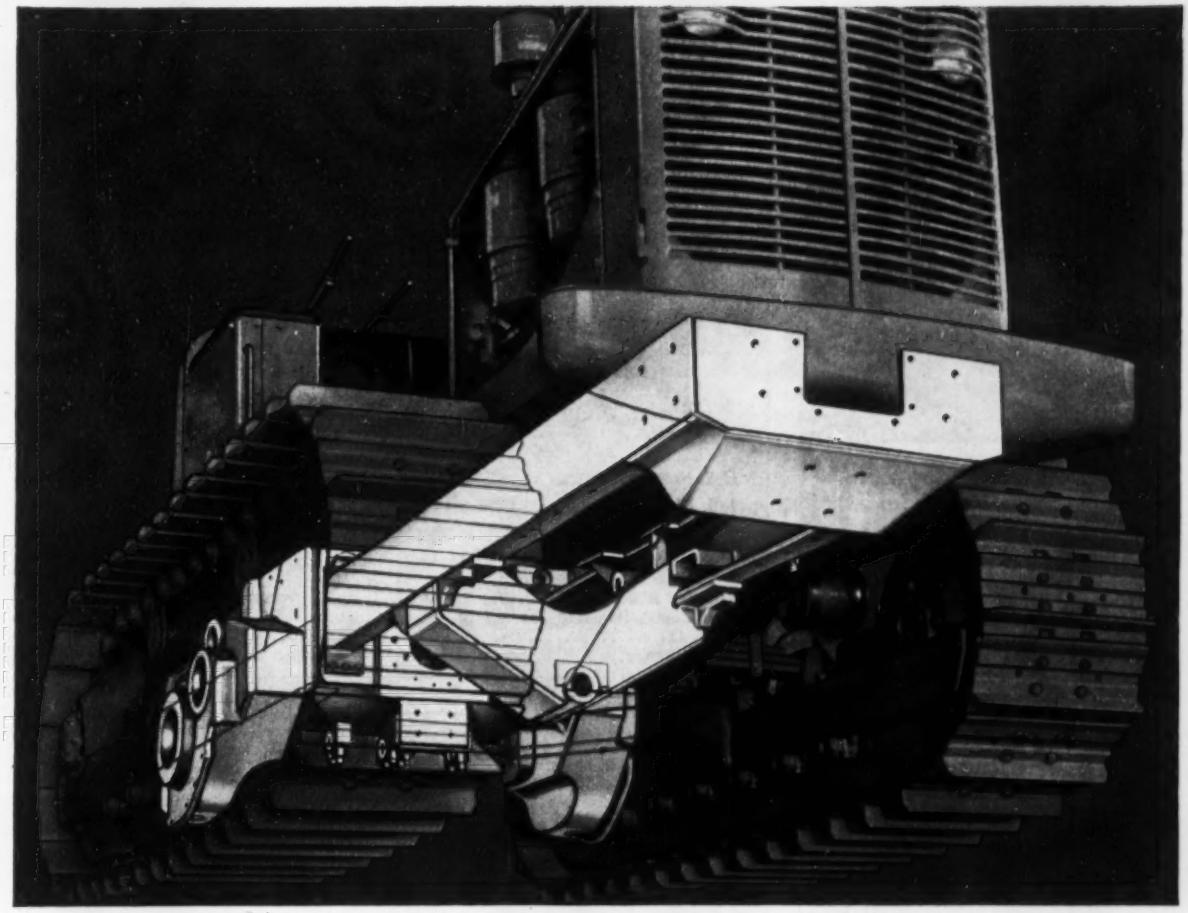
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

In Canada: HORTON STEEL WORKS LIMITED, FORT ERIE, ONT.



HOW THE MAIN FRAME CONTRIBUTES TO TOP TRACTOR PERFORMANCE

One of the big reasons why more and more Allis-Chalmers tractors are being used today is their exclusive main frame design.

These frames are one-piece, all-steel welded structural members (like the girders in a bridge or the columns in a building). They help provide greater strength and flexibility to withstand shock loads . . . make possible better equipment mounting, improved weight distribution and outstanding service simplicity as well.

We invite you to see these advantages . . . first at your nearby Allis-Chalmers dealer . . . and then in a demonstration.

"ROLLS WITH THE PUNCH" — All-steel main frame flexes slightly under extreme shock loads . . . without transmitting strain to engine, clutch or transmission.

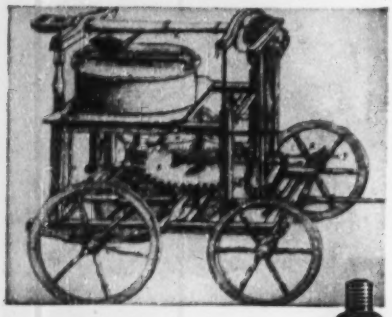
BETTER EQUIPMENT MOUNTING — This frame's compactness provides ample clearance for equipment like front-end shovels . . . permits wide track shoes . . . improves performance of entire unit.

IMPROVED WEIGHT DISTRIBUTION — Box A-frame allows location of main components for best over-all balance . . . putting more weight lower in tractor where it does the most good.

SERVICE SIMPLICITY — Since main frame carries *structural* load, power drive components can be readily removed, repaired or replaced without disturbing adjacent parts.

ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE 1, U.S.A.

17th century PENCIL SHARPENER?



Well, whatever it is, complex as it appears, this drawing is not nearly as complex as the engineering drawings of today. The need for drafting precision has increased steadily over the years.

To keep pace with this need, Staedtler has made constant improvement in pencil design and manufacture ever since the first Staedtler pencils were produced in Nurnberg, Germany, in 1662—about the time the above drawing was made.

Today, the Mars-Lumograph is America's finest imported drawing pencil. In the clutch pencil field, the combination of the new 1001 Mars Technico push-button lead holder and 1904 Mars-Lumograph imported drawing leads insures your having the very best.

The 2886 Mars-Lumograph drawing pencil gives you precise thickness and the blackness of line needed for crisper, cleaner prints. Perfectly graded in 19 degrees—EXEXB to 9H. $1.50 per dozen—less in quantity.

The 1001 Technico Mars-Lumograph push-button lead holder costs no more than ordinary holders, has a noiseless, smooth-working, low-friction clutch mechanism, lightweight wood construction with perfect balance and, built into the push-button cap, a unique lead sharpener. $1.50 each—less in quantity.

1904 Mars-Lumograph Imported Drawing Leads are so opaque that inking-in is not necessary. Leads are ribbbed for firm clutch grip and each has a metal cap which prevents sliding from holder. Available in 18 degrees—EXB to 9H. $1.20 per dozen—less in quantity.

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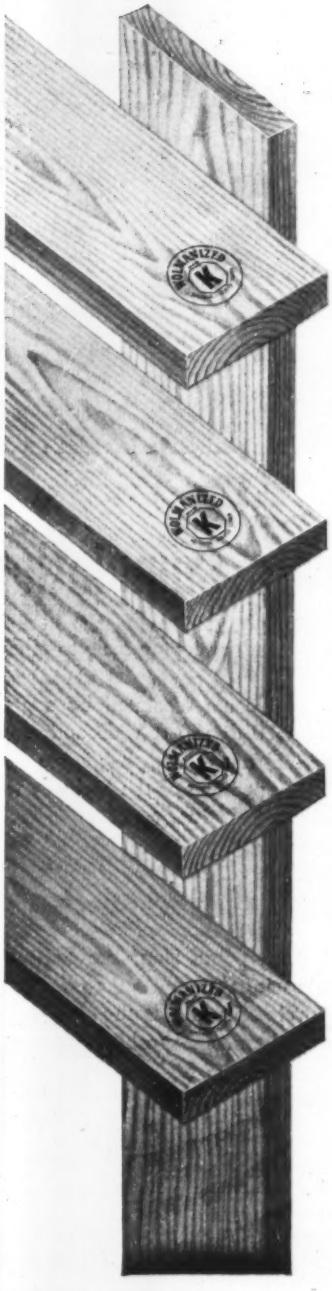

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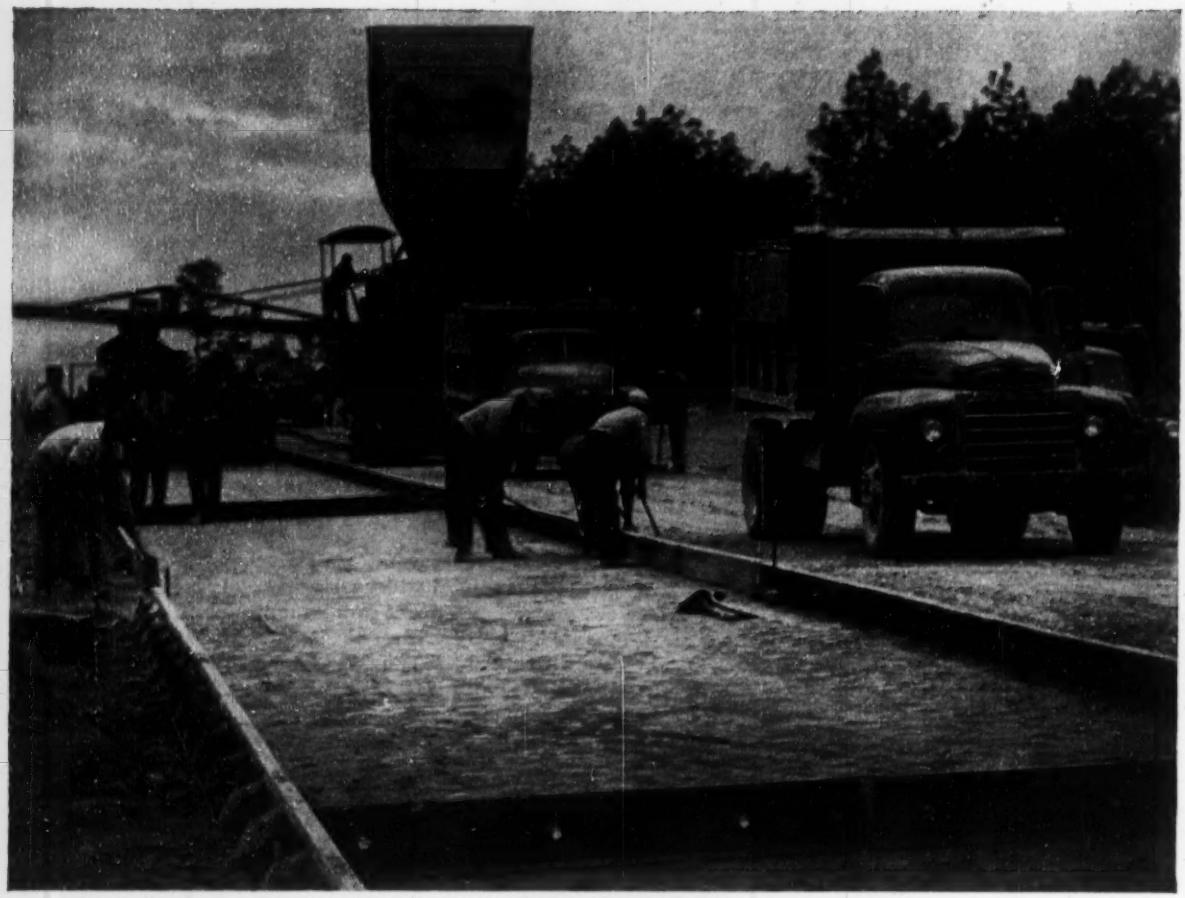
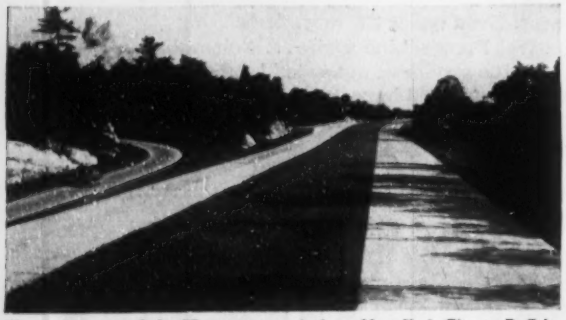


Bethlehem dowel units being installed near Weedsport, N. Y., during the construction of that portion of the highway. *Contractor:* Potter DeWitt Corp., Pavilion, N. Y.

World's Longest Express Highway Nears Completion

The New York Thruway is nearing completion. On it, a motorist will be able to travel north to Albany and all the way across New York state without a single stoplight or grade intersection.

The Thruway is designed for 70-mile-an-hour speeds. The pavement is finished to provide a tire-gripping, non-skid surface in all types of weather. At all points along the highway there is 1000-ft forward vision, and landscaping is designed on a broad, sweeping scale to relieve monotony.



The main route of the Thruway extends from New York City to Buffalo. When the entire system is completed, however, motorists can travel comparable highways from Buffalo north to Niagara Falls and south to Pennsylvania, and from Albany to Massachusetts.

Opposing streams of traffic are separated by a grass medial strip varying from 20 to 150 ft wide and more. Steep grades have been eliminated, with maximum rises of 3 ft in every 100. Eighty per cent of the highway will be 4-lane, the remainder 6-lane.

The materials used in building the Thruway were selected for longevity. The 9-in. cement pavement rests on a 12-in. granular base. Concrete-reinforcing bars and dowel units are two of the Bethlehem Steel highway products being used at many points along the Thruway. In addition, Bethlehem structural steel was used in several hundred bridges and overpasses and Bethlehem guard rail, both beam and cable types, protects many miles of the highway.

BETHLEHEM STEEL

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BETHLEHEM STEEL

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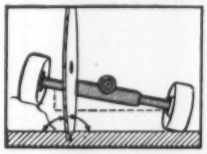
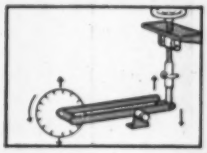
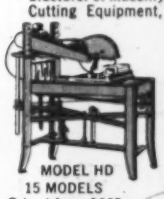


Self-Propelled . . . and powered by 25 Horsepower . . . Clipper's new C-250 "ConSawMatic" cuts the MOST concrete for the LEAST cost per foot! Exclusive 3-Point Suspension on rugged 4-wheel chassis eliminates blade binding, reduces wear. Improved Screw Feed for **positive** Depth Control, essential with new GreenCon Abrasive Blades. Easy to handle, gets you "on the line" fast, ready to cut in a hurry. FREE TRIAL will show you why "4 Out Of 5 Buy Clipper"



by the Makers of **CLIPPER MASONRY SAWS**

World's first—and finest Masonry Saw. Clipper, world's largest manufacturer of Masonry and Concrete Cutting Equipment, sets a new standard for Quality Workmanship and Tested Performance. The name Clipper Guarantees your Satisfaction!



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NOW—You Can Cut Concrete with *NEW* CLIPPER "GreenCon" ABRASIVE BLADES

Savings you never dreamed of—as high as 80% with Clipper's new "GreenCon" Blades. Reinforced Abrasive Blades that knife through green concrete with limestone aggregate. Call or write Clipper today!

NEW Diamond Blades by Clipper—cut ANY concrete. There's new ease and speed in Clipper's **improved blade specifications**... for cutting green, cured or aged concrete. A blade for any job—any aggregate—every saw!

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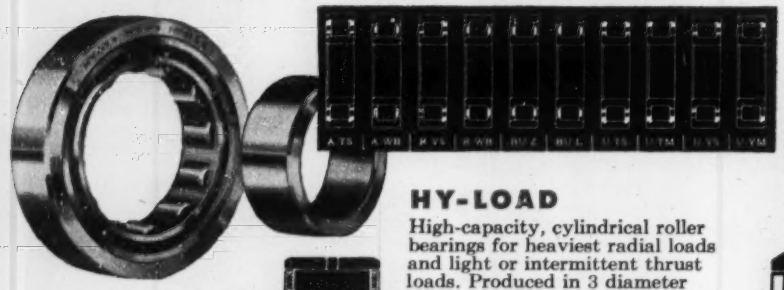
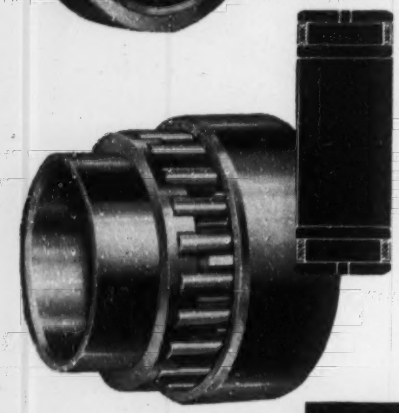


HY-LOAD

High-capacity, cylindrical roller bearings for heaviest radial loads and light or intermittent thrust loads. Produced in 3 diameter series, 2 widths and more than 800 sizes.

WOUND ROLLER

This is a three-part separable bearing available in various width classifications. The roller construction provides maximum resistance to shock, abrasion and fatigue.



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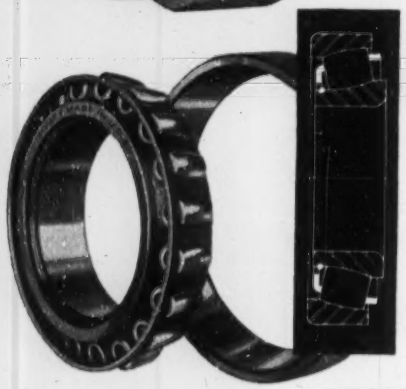
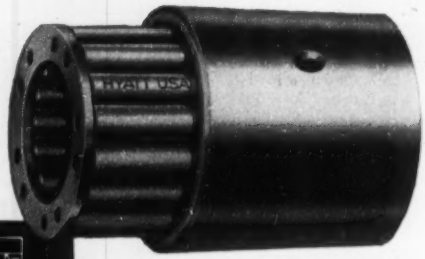
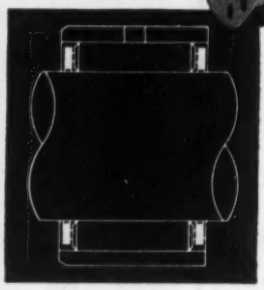
Designed for slow-moving, heavily loaded machinery where large-diameter shafts are the rule. Accordingly, it is available in fractional-size bores for shafts from 4″ in diameter upwards.



BARREL

A series of angular-contact, self-aligning bearings capable of sustaining both radial and thrust loads. Race and roller curvatures insure ideal distribution of load, not only for normal operation but also for conditions of misalignment.





TRUNNIONED ROLLER

Ideal for industrial trucks, textile machinery, gear pumps, conveyors, hoists and agricultural equipment. Rollers have trunnioned ends which fit into holes in the end rings. End rings are located and held parallel by spacing bars which also guide and retain rollers.

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Hyatt's complete line of radial and angular-contact bearings—*more than 800 sizes in the Hy-Load series alone*—makes the engineers' job easier, because it makes possible greater design flexibility. For the equipment *buyer*, this means longer bearing life and lower maintenance costs—with just the right bearings designed into every vital load-carrying position.

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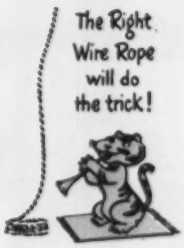

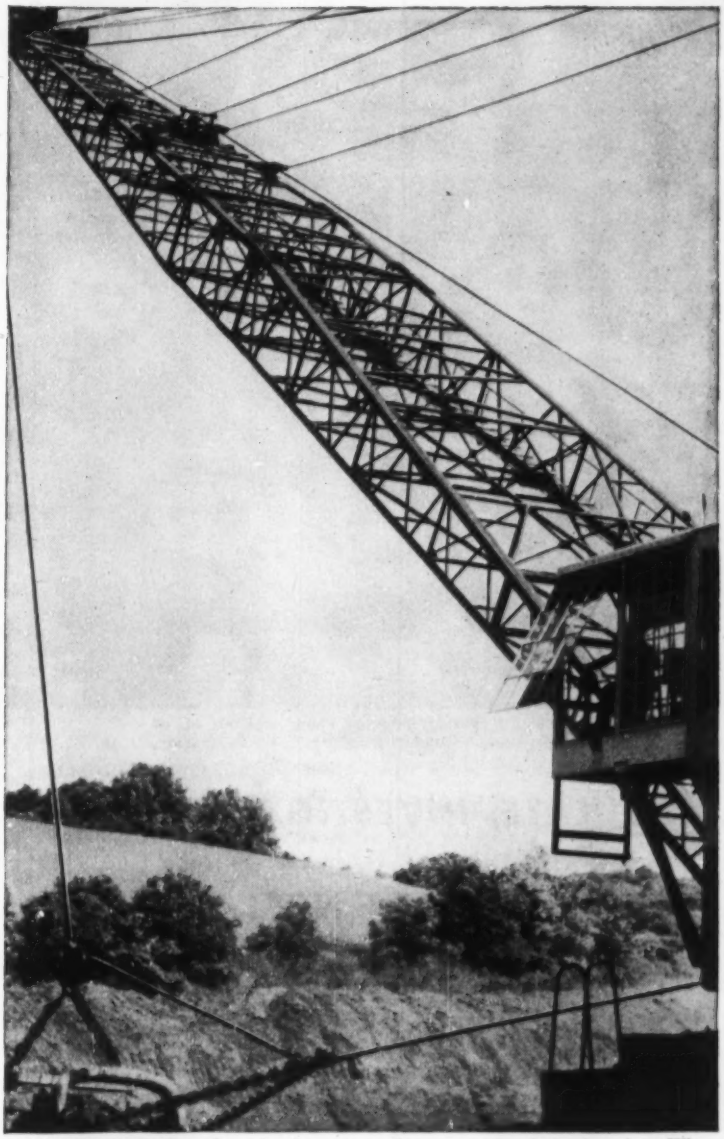

ASSURE YOURSELF of good service from your wire ropes—consult an American Wire Rope Engineer regularly.

ONE of the largest coal companies in Pennsylvania gets excellent service from Tiger Brand Wire Rope. On this big dragline, for example, 2¼" Tiger Brand Drag Rope lasts for 8 to 12 weeks, and 1⅜" Tiger Brand Hoist Rope lasts 4 to 6 months. This is good service, because these ropes work 24 hours a day, 6 days a week, every week of the year.

As a result of consistently good service records like these, many such operators use Tiger Brand Wire Rope exclusively on all their excavating machinery.

Like hundreds of other companies that do a lot of excavating, you will find that once you start using Tiger Brand Wire Rope, you keep down rope costs, keep down rope trouble, and *keep on using* Tiger Brand.

For a list of Tiger Brand Wire Ropes and the jobs each one can do best, send the coupon.

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USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

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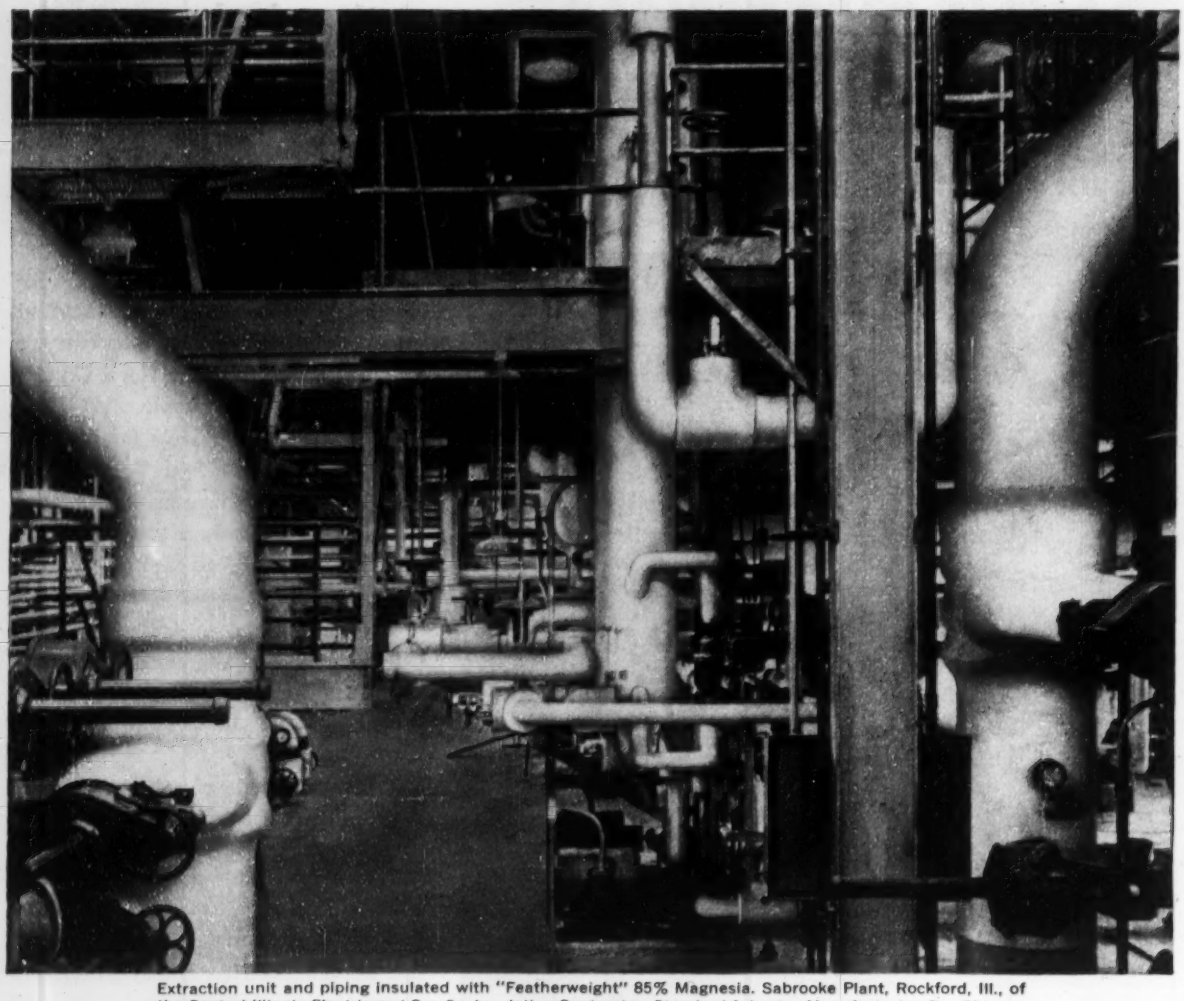
UNITED STATES STEEL



Extraction unit and piping insulated with "Featherweight" 85% Magnesia. Sabrooke Plant, Rockford, Ill., of the Central Illinois Electric and Gas Co. Insulating Contractor: Standard Asbestos Manufacturing Co., Chicago

BEFORE YOU INSULATE, INVESTIGATE

"*Featherweight*" 85% MAGNESIA

The Sabrooke Plant of the Central Illinois Electric and Gas Co. (illustrated) is typical of the thousands of installations where "Featherweight" 85% Magnesia efficiently conserves heat.

"Featherweight" 85% Magnesia has for years—more than 60—effectively fulfilled the needs of schools, hospitals, hotels, apartment and office buildings, power plants, factories—wherever efficient conservation of heat is of importance.

"Featherweight" 85% Magnesia is more than efficient. It cannot burn and will not corrode because it is inorganic. It is light in weight and structurally stable. It is made in simplified thicknesses for pipe installations, so that each size and thickness will fit over or into another size and thickness. This is important where two layer thicknesses are desired and for reducing inventories.

If your company has an insulating problem, the chances are that "Featherweight" 85% Magnesia can help you save heat, save money! Your K&M distributor is an experienced applicator who will gladly give you more information, or write directly to us.

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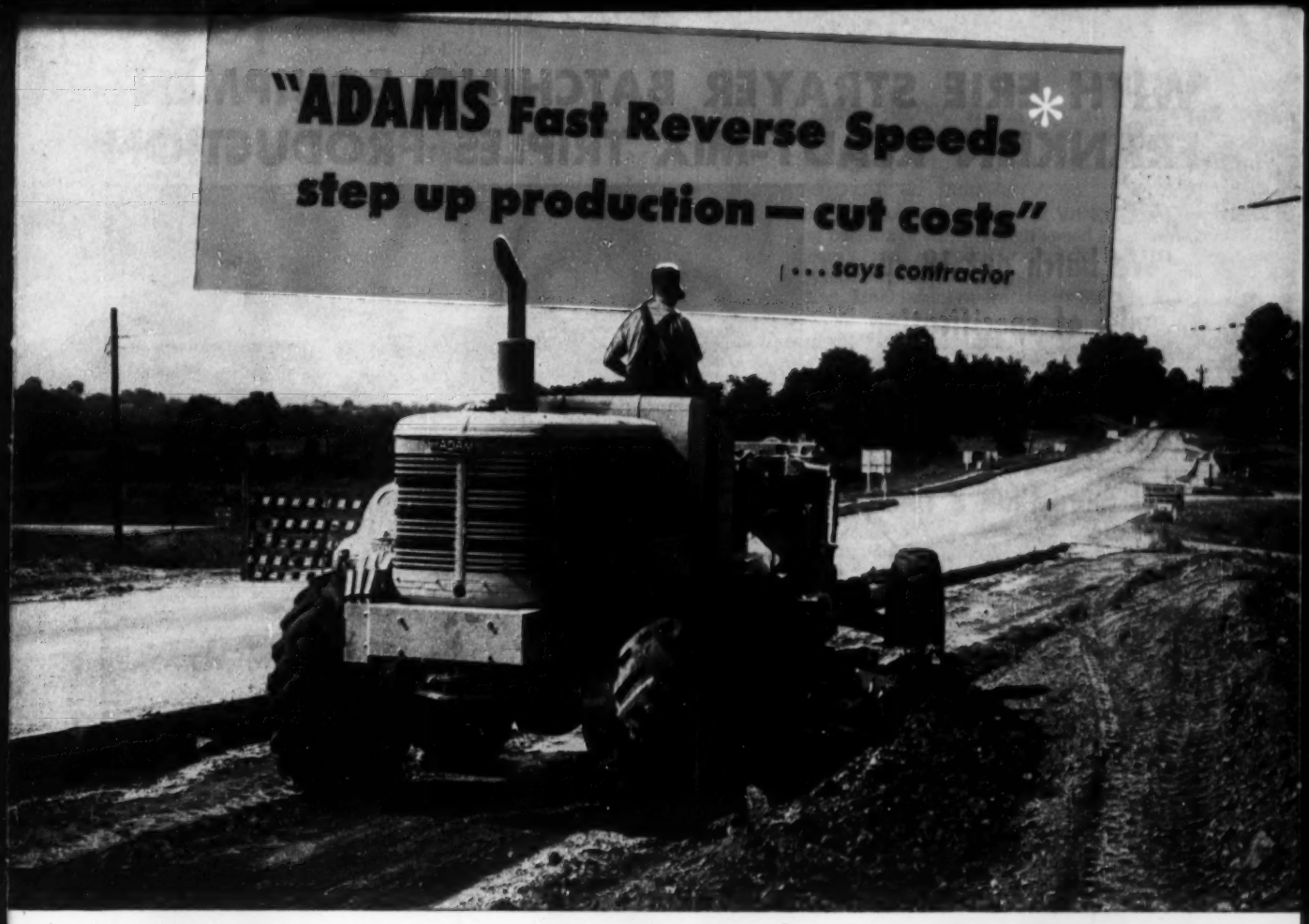


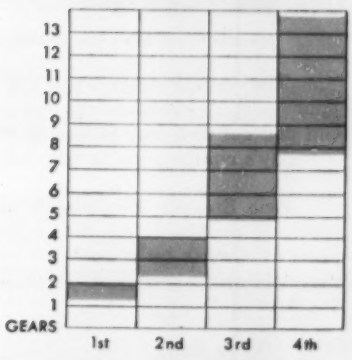
On many jobs—like the road-widening one shown above—it is faster, easier and cheaper to shuttle the motor grader on short stretches than to turn around at the end of each pass—if, that is, the machine is capable of backing at high speed.

The fast reverse speeds of Adams motor graders (up to 13½ mph.) is one of the reasons that Fred Weber, prominent Missouri contractor, likes his Adams above all others. He has this to say, "The fast reverse speeds of the Adams "660," plus its 140 hp. engine, power steering and power-shift moldboard make it a fast and easy machine to work. Also, the extra-low creeper gears make it fine around culverts, intersections and tight places. No other motor grader compares with it."

For work requiring abundant power, fast forward and reverse speeds and positive, precision controls, no other grader compares with Adams. Ask your Adams dealer for a working demonstration.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, IND.

*** Only Adams Has 4 Reverse Speeds**



Adams 4 reverse speeds (up to 13½ mph.) save valuable time in shuttling back and forth on short stretches and in backing to buck snow drifts.

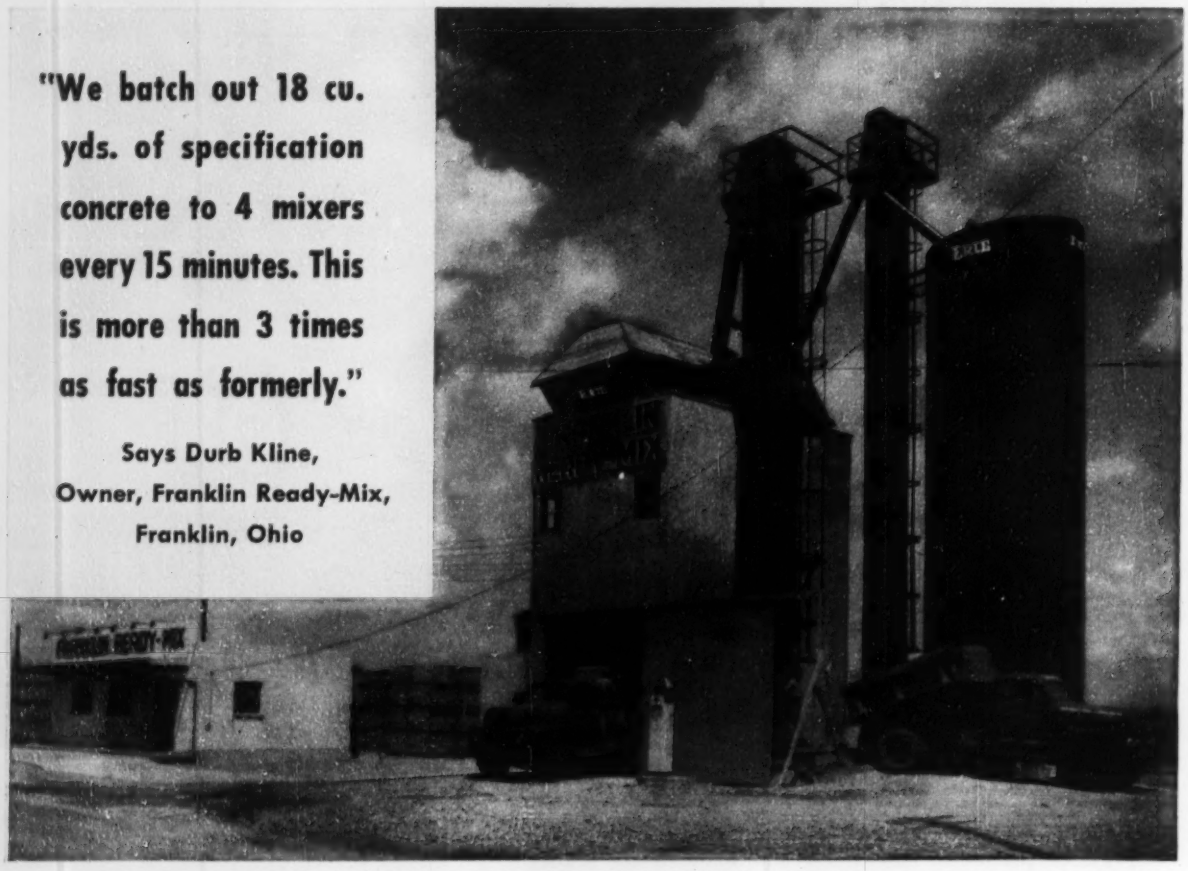
Make your next motor grader an

ADAMS

WITH ERIE STRAYER BATCHING EQUIPMENT FRANKLIN READY-MIX TRIPLES PRODUCTION

"We batch out 18 cu. yds. of specification concrete to 4 mixers every 15 minutes. This is more than 3 times as fast as formerly."

Says Durb Kline, Owner, Franklin Ready-Mix, Franklin, Ohio



Franklin Ready-Mix's Erie Portable Truck Mixer Plant, Type GTES-79 With 853 Bbl. Ground Silo. Sold by Bode-Finn, Dayton, Ohio.

They're asking you politely to cut your profit when they say, "Sharpen your pencil." Profit is the smallest part of your income. How much of it can you cut and stay in business? And even if you did, it wouldn't be enough —today's competition is way beyond that. You must reduce costs.

Erie Strayer Equipment knocks costs down to rock bottom—without touching profits. If anything, you'll increase them. From design to finished product, there's only one idea in mind at Erie Strayer: To build equipment that will make accurately batched concrete fast and at low cost. Franklin Ready-Mix is a typical example of this kind of sound engineering in action.

There's still another advantage with an Erie Strayer set-up. One that's just as important as operational savings. Every unit is a custom-built package made from standard, production parts. This means complete flexibility. And standard parts mean replacements in a hurry when you need them.

You and an Erie spread will make a winning team. Find out about it now.

More Facts About Erie's GTES-79 Portable Truck Mixing Plant

- **One man can operate this unit at full capacity.**
- **Pre-assembled sections make set-up and take-down fast and easy. Stows compactly for over-the-road transit.**

Write for Bulletin GS, Dept. R74

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274 GEIST ROAD **ERIE, PENNSYLVANIA**

want high speed plus endurance? How's this...

1000 HOURS at 3600 R.P.M. UNDER FULL LOAD!

If you were to drive 90,000 miles up an incline at 90 m.p.h., you would approximate the performance of the Model 24A, 331 cubic inch displacement Chrysler Industrial Engine pictured below.

To prove the power of Chrysler Industrial V8 Engines . . . their ability to run for long periods of time at high speed . . . on March 17, 1954 Chrysler engineers placed a production model Ind. 24A Engine on an endurance dynamometer at Chrysler Central Engineering Laboratories. Objective: 1000 hours operation at 3600 R.P.M. under full load.

During every one of the 1000 hours, the Chrysler Ind. 24A Engine delivered an average of 174 horsepower and when shut down, the engine was still in perfect operating condition.

During the run no service was necessary beyond minor maintenance care, such as oil changes and very infrequent spark plug changes and point adjustment. Yet, following disassembly of the engine, the only wear noted was negligible—no more than you might expect from an engine that has been operated for 1000 hours within a long period of time.

While there is every reason to believe that this is a record-breaking endurance run (and don't forget it was made at 3600 R.P.M. under full load), we are confident that every Chrysler Industrial V8 Engine will *at least equal* this astounding record.

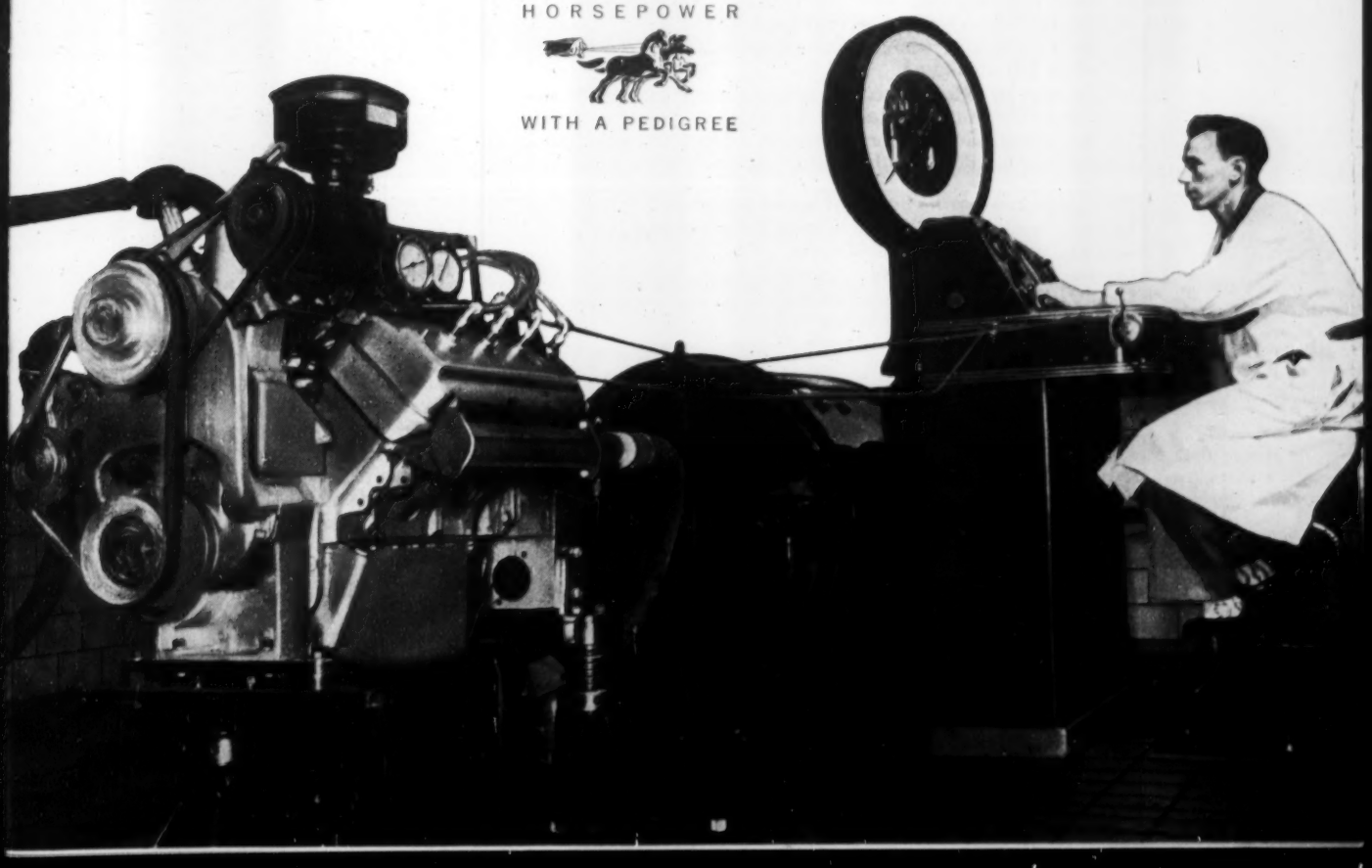
This proves too, beyond a doubt, that the Chrysler Industrial V8 hemispherical combustion chamber design with its short-stroke, low-friction construction, makes an ideal power plant for any equipment that requires continuous high speed operation. Furthermore, in installing a Chrysler V8 Engine in preference to a diesel engine of similar horsepower, you can reduce your size estimate by one-half, your weight by two-thirds, and your cost factor by three-quarters!

For detailed information on the Model 24A or any Chrysler Industrial Engine, see a Chrysler Industrial Engine Dealer, or write: ***Dept. 87, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

CHRYSLER *Industrial Engines*

INDUSTRIAL ENGINE DIVISION • CHRYSLER CORPORATION

HORSEPOWER WITH A PEDIGREE



"They wanted the finest,"
says R. F. Tickle
of Adjustable Forms Co., Inc.

"So we used
MASONITE
CONCRETE FORM
PRESDWOOD"

1000 Lake Shore Drive Bldg., Chicago. Architects: Sidney H. Morris and Associates. Shaw Metz & Dolio, Associate Architects. General Contractors: Loftus Contracting Co. and Jacobson Bros. Co. Formwork by: Adjustable Forms Co., Inc.

"This was a quality job on Chicago's famous Gold Coast. Nothing but the best would do. So, we used Masonite Concrete Form Presdwood to get a perfectly smooth concrete surface for the ceilings. When finished, they were ready for painting with a minimum of rubbing." You, too, can save these 3 ways:

1. Use the smooth side when you need a smooth surface to be painted or left unpainted.
2. Use the screen side for architectural concrete to provide a better paint bonding surface.
3. Use the screen side on concrete work where carborundum rubbing is specified—cuts hand rubbing costs 50% or more.

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- Low first cost. Less than ½ that of other smooth-surface methods. Won't split, splinter or crack.
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- Can be curved for arches, columns, etc.
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"Masonite" signifies that Masonite Corporation is the source of the product

READER COMMENT

Flat-plate data wanted

SIR: Mr. Teetor's article on flat-plate reinforced concrete construction (ENR Mar. 18, p. 49) is a very good one from the viewpoint of insuring that this form of construction is not abused. Beyond referring to empirical coefficients available for computing bending moments in certain types of slab and warning on their misapplication, however, Mr. Teetor does not cover design.

I understand that the original flat-slab design with drop panels was developed from model studies and full-scale tests rather than from theory. Possibly, both the flat-plate construction referred to and the lift-slab type shown on p. 27 of ENR April 15 have similar origins.

If you have any references to books or articles that give either the theoretical design methods or tabulations such as are available for the older, drop-panel flat-slab construction, I would appreciate it if you would send them to me.

M. G. DEMPSTER
Asst. Director of Engineering
Department of Works
Hawthorn, Victoria, Australia

[EDITOR'S NOTE—Design coefficients and other criteria for flat plates can be found in most recently published U. S. textbooks and in "Building Code Requirements for Reinforced Concrete," of the American Concrete Institute.]

Why the compact failed

SIR: Your editorial of June 17, in connection with the Delaware River diversion case raises the point "why a master for the Supreme Court succeeded in doing what the Interstate Commission on the Delaware River Basin failed to accomplish." If the matter at issue is the solution of the problem of the use of the Delaware River, then I believe that the Supreme Court decision has not settled the matter.

The Incodel plan, or any comparable proposal which provided for a compact between the states, seemed to be a rational way to settle the problem. Three of the four states had agreed to such a compact, not including Pennsylvania. It is true that there were certain provisions of the Incodel plan which required adjustment and compromise among the states. If negotiations had been continued, it should have been expected that an

(*Continued on page 14*)

an ACCO product

American Cable "Green Strand" Wire Rope

What Wire Rope Do You Use on Your Carrier Scrapers?

• A complete description of a scraper cable is as long as your arm. But all you have to remember, if you are buying American Cable, is simply: TRU-LAY Streamlined Scraper Cable. And here's what you get, and why—

6 x 25 Flattened Strand—This means six strands of twenty-five wires each wound around triangularly shaped wires in the center of each strand. One flat side of the center wires of each strand faces out providing a relatively flat surface on the strand. The outsides of the six strands together make a smoother surface which gives the rope a much better bearing area against small sheaves and drums.

Independent Wire Rope Core—This adds considerably to the rope's breaking strength, and provides a solid steel core which keeps the rope from pulling down or flattening out on the small sheaves of a carrier scraper.

Lang Lay—When the wires in the strands are laid in the same cross-direction as the strands in the rope, the rope is Lang Lay. This makes the rope last longer because more of the outside wires are exposed to wear. It also makes the rope withstand more bending because of the helix of the wires. The crankiness of Lang Lay is removed by American Cable by preforming.

TRU-LAY Preformed—American Cable's Streamlined Scraper Cable is preformed to make it handle easier and last longer in bending around small sheaves. When wires do break, they stay in place instead of barbing out to slice hands and snag clothing.

Improved Plow Steel—That's what TRU-LAY Preformed is made of. The wire in this all-steel wire rope has an average tensile strength of 260,000 pounds per square inch. Look for the *green strand* which identifies this strong wire rope.

Just ask for TRU-LAY Streamlined Scraper Cable next time and every time you need rope for your carrier scrapers. You can also use it for the blade rope on your bulldozers. Your American Cable distributor stocks it and can give you quick service. Call him today or write our Wilkes-Barre, Pa., office for further information.

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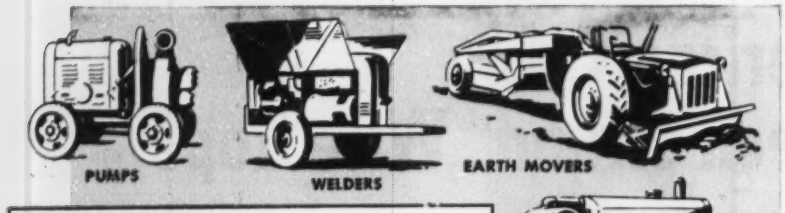

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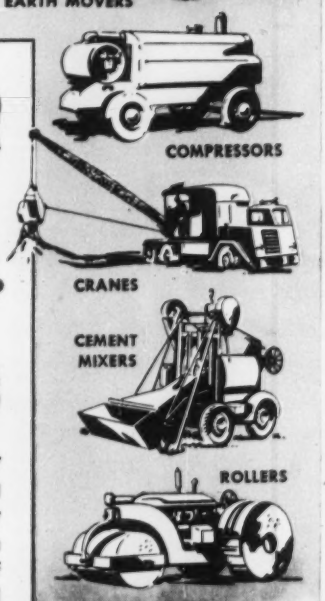

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READER COMMENT

agreement could have been reached, especially since an apparent agreement has been reached in the Supreme Court case.

My reason for saying that the issue has not been settled is illustrated by Pennsylvania's own submissions to the Supreme Court master. One of Pennsylvania's witnesses, Samuel A. Greeley, stated that although harm would not at this time be caused to Pennsylvania by the proposed New York diversion and release, his studies clearly showed that the time would come when the water needs of the inhabitants of Pennsylvania would be harmed and restricted. He fixed 1978 as the probable time when the available quantity of water would be insufficient to supply the water needs of the lower basin, and that the matter should be reconsidered eight to ten years before the critical year.

Based on this testimony, we can only assume that the matter is headed for the courts again by 1968, a mere matter of 14 years from now.

To illustrate further the point that the matter is not settled, Pennsylvania pressed for the inclusion in the decree, a provision that notwithstanding any expenditures made by New York to construct Cannonsville Reservoir, Pennsylvania would have the right to request the decree to be modified to prevent damage, including if necessary, the complete discontinuance of the additional diversion by New York. Although this wording did not appear in the final decree of the court, the decree is left open and any parties can request to have it reopened.

Although the four states involved and the City of New York, through their official counsel, agreed to the decree, it is of interest to note that Philadelphia, by far the largest municipality in the river basin, was not in accord with the position taken by Pennsylvania. It had originally petitioned for permission to intervene in the case, but had been turned down by the Supreme Court. At the time that the final decree was approved, Philadelphia was in the process of making an additional plea to the Supreme Court for permission to intervene and state its position.

SAMUEL S. BAXTER
Water Commissioner
Philadelphia, Pa.

CALENDAR

Conference on new developments in engineering design, Virginia Polytechnic Institute, Blacksburg, Va., Aug. 4-6.

National Council of State Boards of Engineering Examiners, annual meeting, Hotel Saint Paul, St. Paul, Minn., Aug. 26-28.

Truscon Specializes in BIG DOORS...

Whatever size the wing span, Truscon can make the hangar door to accommodate it. High, wide, quick-opening doors that help get the big ships in and out fast. That's because Truscon really knows big doors . . . knows the answers to big-door problems . . . has 28 years of experience in steel hangar door design and manufacture.

And, Truscon offers you a variety of *proven* types of steel hangar doors, fitted to all airport service and climate conditions. Truscon designs include Straight Slide Doors, Tail Doors, Braced and Unbraced Canopy Doors, Vertical Lift Canopy Doors. Truscon door engineers and field crews will help you apply the proper design and type to the job at hand. Write:

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JENKINS PRACTICAL PIPING LAYOUTS 73

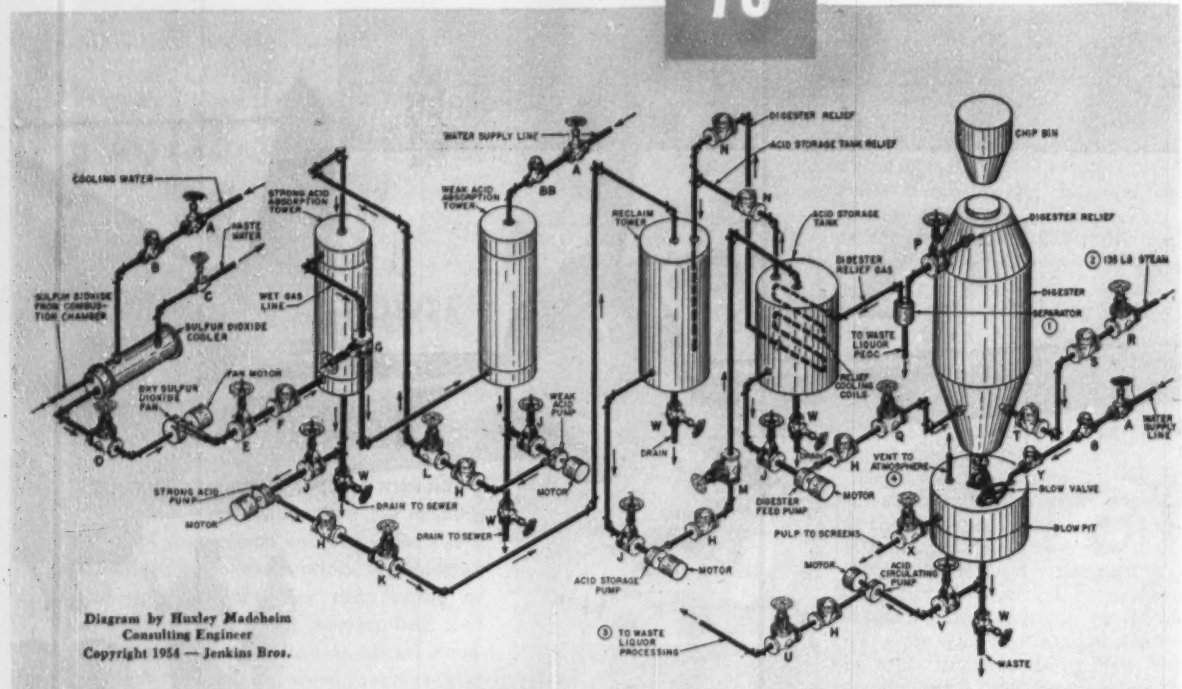

Diagram by Huxley Madeheim
Consulting Engineer
Copyright 1954 — Jenkins Bros.

VALVE RECOMMENDATIONS

For details of Jenkins Stainless Steel Valves, write for Bulletin 200.

Code	Quan.	JENKINS VALVE	SERVICE
A	3	Fig. 106-A, Bronze Globe	Water supply control
B	2	Fig. 352, Bronze Swing Check	Water line secondary check
BB	1	Fig. 1328, Stainless Steel Swing Check	Water line check
C	1	Fig. 47-U, Bronze Gate	Cooler water shutoff
D	1	Fig. 613, I.B.B.M. Globe	Sulfur dioxide fan control
E	1	Fig. 651-A, I.B.B.M. Gate	Gas shutoff
F	1	Fig. 1331, Stainless Steel Swing Check	Prevent strong acid backflow to SO_2 fan
G	1	Fig. 1307-A, Stainless Steel Gate	Gas shutoff
H	5	Fig. 1331, Stainless Steel Swing Check	Prevent backflow to pump
J	4	Fig. 1307-A, Stainless Steel Gate	Pump suction shutoff
K	1	Fig. 1317, Stainless Steel Globe	Strong acid pump discharge control
L	1	Fig. 1317, Stainless Steel Globe	Weak acid pump discharge control
M	1	Fig. 1317, Stainless Steel Globe	Acid storage pump discharge control
N	2	Fig. 1331, Stainless Steel Swing Check	Prevent gas backflow
P	1	Fig. 1307-A, Stainless Steel Gate	Digester relief control
Q	1	Fig. 1317, Stainless Steel Globe	Digester feed pump discharge control
R	1	Fig. 1040, Cast Steel Globe	Steam control valve
S	1	Fig. 1025, Cast Steel Swing Check	Steam line secondary check
T	1	Fig. 1331, Stainless Steel Swing Check	Prevent acid backflow
U	1	Fig. 1317, Stainless Steel Globe	Acid circulation pump discharge control
V	1	Fig. 1307-A, Stainless Steel Gate	Circulating pump shutoff
W	5	Fig. 1308, Stainless Steel Globe	Drain control
X	1	Fig. 1317, Stainless Steel Globe	Pulp discharge control
Y	1	Fig. 1328, Stainless Steel Swing Check	Prevent acid backflow

How to plan PIPING FOR ACID LIQUOR PREPARATION IN THE SULFITE PULPING PROCESS

The sulfite pulping process calls for a digester solution that is strongly acid. It is prepared by burning sulfur or pyrites to form sulfur dioxide, which is passed through absorption towers containing limestone and water. This produces an acid liquor consisting mainly of calcium bisulfite and sulfurous acid. The wood chips are cooked with this acid liquor at approximately 300°F, by steam admitted as indicated in the diagram.

Pressure is reduced by opening the digester relief valve when cooking is completed. The hot gases pass through the coils in the acid storage tank to preheat the liquor, then back to the reclaim tower where they go into solution. Next, the liquor and pulp are forced into the blow pit by the pressure remaining in the digester. The liquor is drained off and sent to waste, or is processed for by-products. Water, free of impurities which might contaminate the pulp, is then admitted to wash the pulp thoroughly. After this washing, the pulp passes onto screens and eventually to the paper making process.

Valves controlling the dry sulfur dioxide gas (prior to passing through an absorption tower) are iron body bronze mounted. Valves specified for the wet sulfur dioxide gas (after passing through an absorption tower) are stainless steel, because of the corrosive nature of the acid bearing gas. Valves in the liquor lines are Stainless Steel, Type 316, due to the corrosive combination of calcium bisulfite and sulfurous acid. Valves for water and steam lines are bronze, with the exception of the check valves marked "S" and "Y", which are stainless steel due to the possibility of acid liquor or gas backing up.

Consultation with accredited piping engineers and contractors is recommended when planning any piping installation.

To simplify planning, select all the valves you need from the complete Jenkins line. It's your best assurance of *lowest cost in the long run.* Jenkins Bros., 100 Park Ave., New York 17.

Complete description and enlarged diagram of this layout free on request. Includes additional detailed information.

JENKINS VALVES

Jenkins Bros.

SOLD THROUGH LEADING INDUSTRIAL DISTRIBUTORS EVERYWHERE

ENGINEERING NEWS-RECORD

Vol. 163, No. 4 July 22, 1954

Number of copies of this issue printed: 63,666

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THE CONSTRUCTION WEEK

EPOCHAL—Sen. Francis Case of South Dakota—chairman of the Subcommittee on Roads—obviously subscribes to the adage: "Make no small plans."

In a Senate speech he proposed what he termed some "epochal plans: construction of a transcontinental east-west expressway from New York to Portland, Ore.; a north-south midcontinent expressway from the upper Mississippi Valley to the Gulf of Mexico; a sea-level Panama Canal.

U. S. NIAGARA CANAL?—There's something approaching official backing for the renewal of a proposal to build a Niagara Falls by-pass for ships on the American side.

Backers of the new try are two New York State Senators, who are urging construction of a canal from a point near Lewiston to the east branch of the river north of Grand Island. The legislators are pushing for the by-pass as part of the St. Lawrence Seaway.

PACKAGED BRICK?—It's worth following the activities of the new Technical Research and Development Committee of the Mason Contractors Assn., in its efforts to get manufacturers to adopt packaging for brick and concrete block.

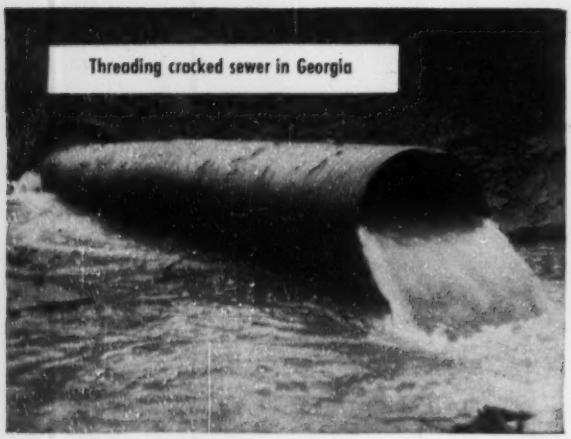
Six months ago (ENR Feb. 4, p. 24) the association adopted a 24x32-in. package as basic 11-point Masonry Package Specification (MCA Spec. No. 1), detailing contents, size, purpose of the package; and called on manufacturers to cooperate to produce it.

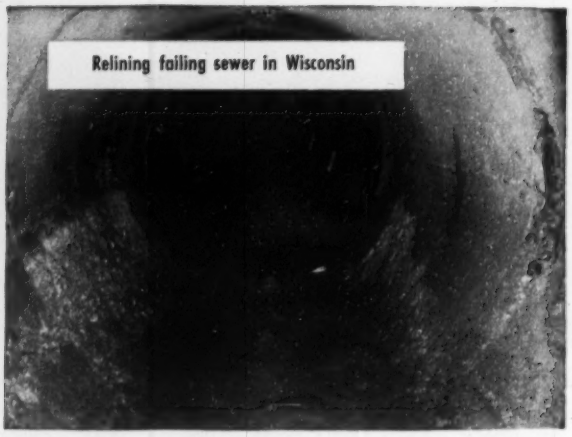
HELP FOR ACADEMY—Pleased with selection of Colorado Springs as site for the new U. S. Air Academy, El Paso County's zoning board is moving fast to insure final OK by the U. S. government.

First step: set up a buffer zone surrounding the academy site (13 mi. north of Colorado Springs) in which all building will be restricted subject to approval by the zoning board.

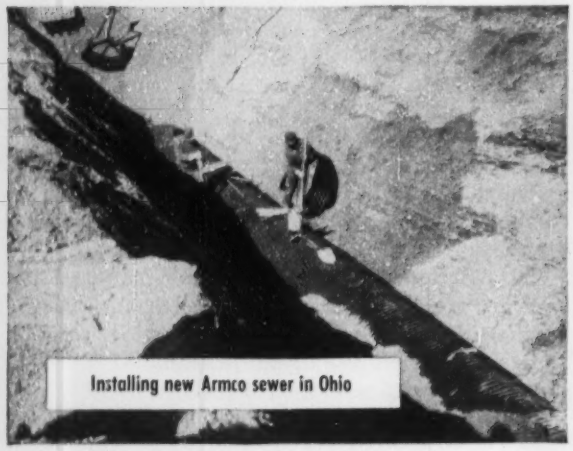
POWER AT KEMANO—Crowning three years of construction work, the world's largest underground power station now is producing electricity. The first 106,000-kva generator at Aluminum Co. of Canada's Kemano, B. C. plant was activated July 15.

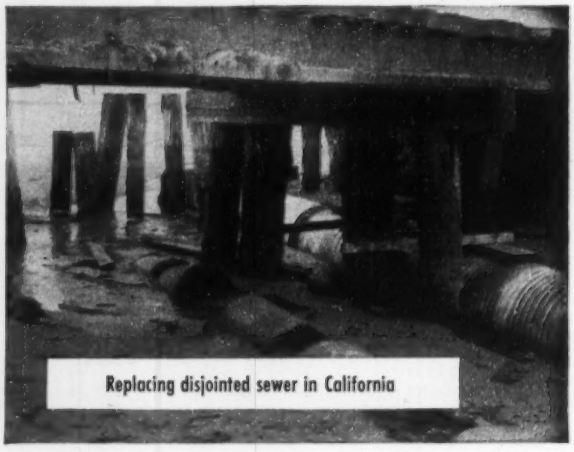
Two added units—also powered by 140,000-hp, four-nozzle turbines under 2,500-ft head, are due to go on the line soon—and installation of more of the planned 16 generators will depend on rate of expansion of the aluminum smelter at Kitimat, 50 mi away. Alcan will spend $275 million on the total job (ENR Nov. 13, 1952, p. 31).





Which Armco sewer saved the most money?





Was it relining the failing sewer; threading the cracked pipe; replacing the disjointed structure; or installing an Armco Sewer in a brand-new installation? Fact is, they *all* saved plenty of money. But considering original costs, the *new* Armco Sewer will save much more through the years.

The new Armco Pipe will be faced with the same hazards that were disastrous to the other structures. But because of the flexible strength of corrugated metal, there is no danger of cracking. Positive bolted connections eliminate disjointing. And with Armco ASBESTOS-BONDED Pipe, the corrosive sewage will not cause damage. A long life for the new Armco Sewer is assured.

No two sewer problems are alike. But Armco can supply a structure to solve practically all of them. Armco Corrugated Metal Pipe and Pipe-Arch are recommended for normal sewer use; ASBESTOS-BONDED Pipe and Pipe-Arch for severe corrosion problems; MULTI-PLATE Pipe, Arch and Pipe-Arch for large area requirements. For sizes and other factual details, write us. Armco Drainage & Metal Products, Inc., 1394 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: Write Guelph, Ontario. Export: The Armco International Corporation.

Armco Sewer Structures

ARMCO

WASHINGTON OBSERVER

Federal vs. private construction of hydro-power is emerging as a political issue that may figure heavily in the congressional elections this fall. Control of the House and Senate and, consequently, control of federal funds for dam building and transmission of electricity are at stake.

Recession, cold war and farm policy aren't near the issues the Democrats had been counting on. And as campaign-time gets closer, they will become less important, broadly speaking. Even the housing "scandals" are getting washed out early enough to diminish their importance, political observers believe. True, these issues may count in some particular congressional district, but none hit as broadly as power. The Northwest, the Southwest, TVA and Southeast all have important power disputes gaining heat.

•

Eisenhower is trying to get some kind of settlement on some of these issues now.

Appointment of a new TVA chairman will have broad effect on the future of the Tennessee Valley, as well as quiet the dispute over private vs. TVA construction of additional steam power to supply the AEC plant at Paducah, Ky. Pro-TVA senators have put a crimp in the Administration's plan for letting a private syndicate construct a plant at West Memphis, Ark., to beef up TVA supplies; and a delay possibly may be called pending the new chairman's study.

Eisenhower is expected to nominate Brig. Gen., Herbert D. Vogel, now southwest engineer for the Corps of Engineers, before Congress adjourns.

Nomination of Clarence A. Davis as the new Undersecretary of Interior to succeed Ralph Tudor will bring on a new look at reclamation policy in the Northwest, and in the Southeast Power Administration.

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The investigation into housing scandals will go to the road—and right now there's no real end in sight. There will be a one-week recess next week (7/26 week) and then another week in Washington. After that Senator Capehart has plans to hold hearings in Los Angeles, Chicago, Indianapolis, Columbus, Pittsburgh, New York City, and possibly other cities. If this schedule is followed, the show will go on right up to Election Day.

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Plans to beef up federal statistics on construction activity got hit hard when the House Appropriations Committee refused to vote any money at all for the new program. Commerce Department asked for $1 million and Bureau of Labor Statistics, $100,000 (ENR July 15, P. 21). In testimony before committees, officials of both agencies noted that construction figures are probably the poorest of those published by the government—they're slow, they're not complete, they're not as solid as they should be.

There's only one hope now: the Senate Finance Committee which will have the last crack at the supplemental appropriations bill which had the budget request. Also voted down by the House committee: $8 million for a new census of business, manufacturing, and mineral industries. Officials and industrial marketers have been saying this is particularly needed to show businessmen where business is.

•

Volume of construction in air defense is beginning to add up. Defense officials are asking for a total of $110 million to complete construction needed at some 69 existing radar bases across the top of the U. S.—and to build an additional 485 radar posts. This is in addition to the $75 million already voted for Nike guided missile and radar installations around major cities, and an estimated $50 million more to come.

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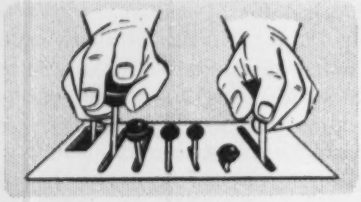

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President starts ball rolling for bigger highway program

Federal and state officials begin search for answers to problems posed by $50-billion roadbuilding goal

President Eisenhower's proposal to spend an extra $50 billion on the nation's highways over the next 10 years is sure to mean an important boost for highway construction. But it has raised a host of questions that will have to be answered before the shape of things to come can be seen clearly.

The President's proposal was a call for cooperation and help from the states in working out the details of a program to put the U. S. road system into first-class condition. He said the highway modernization job was necessary to raise the productive efficiency of the nation, to cut the annual highway death toll and to meet the demands of defense. Pointing to those objectives, he asked the governors of the states to work with him in shaping a program covering four broad points:

- A grand plan to solve transcontinental, inter-city, farm-to-market and urban highway problems.
- A financing proposal based on self-liquidation where possible and on federal help.
- A cooperative federal-state alliance which would leave administration in local areas.
- A federal program, in cooperation with the states, for building an up-to-date interstate system. This could involve advances of federal allocations and federal guarantee of state and local obligations.

• Federal and state studies—The next move is up to the governors. They expect to work closely with the American Association of State Highway Officials to develop some plans. The governors expect to meet again later this year (probably after the November elections) and put together a program.

The federal government also is doing some planning. The Bureau of Public Roads is studying the highway finance problem, including toll road financing, and is due to report before Feb. 1, 1955. The President also formed a Cabinet committee with Secretary of Commerce Sinclair Weeks as chairman to make a comprehensive review of federal transportation problems. This committee will report before Dec. 1.

• Financing is the big question—The crux of the problem posed by the President's proposal, of course, is: Where is the money to come from? State highway budgets are now at a record high; the federal government has just doubled its aid funds; and toll road authorities are engaged in new undertakings costing around $1.5 billion (ENR April 22, p. 21).

It's not going to be easy for the states to ante up more highway funds. Many highway students believe that the gas tax has been pretty well played to the limit—except that some states might get more road work out of existing gas taxes by joining the 24 states that now have constitutional provisions prohibiting diversion of this revenue.

Imposition of axle-mile and ton-mile levies on trucking hasn't worked out well thus far. Some states have tried these so-called third structure taxes and given them up as not worth the cost and administrative bother involved.

Ohio has antagonized neighboring states with her recent truck levy and thereby focussed attention on the need for reciprocal arrangements and generally better cooperation between states if this is to be a major source

Modern highways for efficiency, safety, defense

Typical of the kind of highway work that would be included in any highway modernization program is the new, three-level traffic interchange northeast of Annapolis, Md. The $2-million Ritchie-Revell Interchange is located at the intersection of the Baltimore-Annapolis highway and U. S. Route 50 which handles traffic between Washington and the Chesapeake Bay Bridge.

The current average daily volume is estimated at 17,400 vehicles. Feature of the interchange is a three-level bridge which eliminates grade crossings of four major and two minor lanes of traffic. The lowest level is a two-lane, one-way road built in a cut; the middle level is a three-span, rolled-beam bridge which provides two 30-ft roadways with a 14-ft raised median strip; the upper level is a five-span deck, plate-girder bridge which provides a 30-ft roadway for one-way traffic. Engineering and design for the interchange was by J. E. Greiner Co., Baltimore. Major part of construction was by F. P. Asher, Jr., and Sons, Inc., Annapolis. Wright Contracting Co., Columbus, Ga., built the three-railroad grade separation.

...Highways

of revenue for them in the future.

State and local government debt limit statutes and constitutional provisions would be a serious drawback in some instances to further borrowing for highway purposes. This would still be an impediment if, as has been proposed, the federal government were to guarantee local obligations.

• **How Washington might help**—It seems certain that the federal government is not going to be talked out of its gas tax. Although this hardy perennial came up again at the Governor's Conference and was the basis of some coolness toward the President's proposals, notably by Pennsylvania's Gov. Fine and California's Gov. Knight, the conference did not take a stand against the federal tax.

There has been no indication that the federal government is considering boosting its highway aid funds beyond the $875 million a year in state matching funds provided for fiscal '56 and '57 in the ombnibus highway bill passed in April. But, there has been talk of making such funds available in advance to help states that have reached their borrowing capacity.

Consequently emphasis is likely to be placed on proposals for indirect federal financing. Despite the debt limit bugaboo, serious consideration apparently will be given to possibilities for guaranteeing state and local highway bond issues, a federal loan agency for state and local roadbuilding also is considered possible.

Up to now, the federal government has been wary about getting into the toll road picture. However, the self-liquidating aspect of toll roads makes them particularly attractive in the light of the President's indication that all avenues of aid should be explored.

Cities see hopes for getting a better break on urban highway improvements if the federal government plays a bigger role in roadbuilding. That the cities aren't getting a fair shake from the states has been a chronic complaint of municipal officials. They have contended that over 50% of gas tax revenues come from city use, while only about 15% comes back for urban highway construction.

Parking cost high

St. Louis will have to spend between $5 million and $6 million to provide off-street parking facilities that will meet the city's needs in the downtown area and four outlying shopping areas, according to the Ramp Building Corp., which recently completed a city-sponsored survey of parking requirements.

House-Senate conferees finally agree on compromise version of housing bill

A compromise housing bill reached the Senate and House of Representatives for final approval this week. The action climaxed nearly two weeks of conferences in which some 180 points of difference between the House and the Senate versions of the bill were ironed out.

Most of the controversy in the conference committee arose over President Eisenhower's proposed four-year, 140,000-unit public housing program. The compromise bill puts a one-year limit on the program and attaches conditions that some supporters of public housing said would prevent any start on the program except in areas where slum clearance and redevelopment projects are going on.

In its final form, the bill:

• Gave a one-year lease on life to public housing ,with 35,000 starts authorized for fiscal 1955, but with restrictions.

• Liberalized government insured mortgages on both new and existing homes.

• Reduced the President's program for stimulating home ownership of low-cost housing from 100% guarantees and no down payments on 40-year mortgages to 95% guarantees and 30-year mortgages.

• Limited profits to 10% on multi-family construction to eliminate huge "windfall" profits in the future.

• Tightened Title 1 to reduce abuses under the home-improvement program.

• Provided for gradual transition of Federal National Mortgage Assn., to provide for private investment and eventual private ownership of this federal agency set up to provide a secondary market for mortgages.

• Continued urban renewal program, increasing maximum mortgages to as much as $1,000 a room for multi-family rental projects in high-cost areas.

Major provisions of the bill:

• **Public housing**—The House completely ignored the President's recommendation for a public housing program. However, on the Senate floor the White House program was written into the bill, providing for 35,000 starts in each of next four fiscal years. The compromise bill calls for 35,000 in fiscal 1955, provided the local housing agency certifies that units are needed for shelter for those displaced by slum clearance and redevelopment.

• **Maximum mortgages** — Conferees took the more liberal House figures which provide for a maximum mortgage of $20,000 on single family dwellings, with 95% of the first $9,000 gauaranteed, and with discretion for the President to raise the $9,000 figure to $10,000. On the remainder of the mortgage in excess of the basic figure, the insurable amount would be 75%.

Two-family units would carry a maximum mortgage of $20,000; three-family, a maximum of $27,500, and four-family, a maximum of $35,000. The first $9,000 of these would be insured at 90% and the balance at 75%.

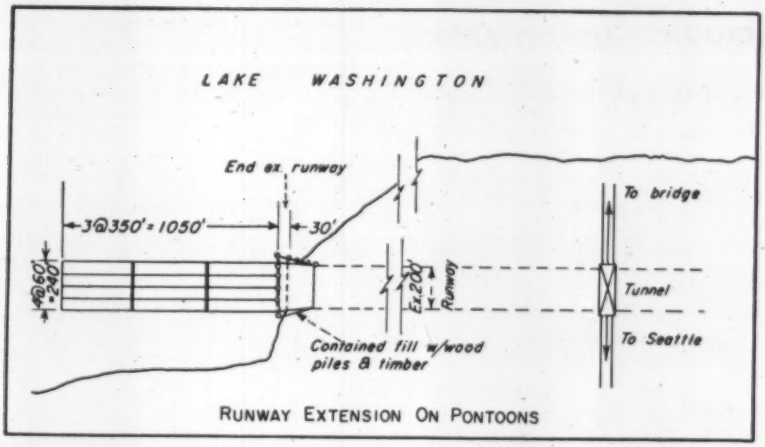
The conferees dropped the President's recommendation calling for 100% guarantee on new and existing homes with no down payments and a maximum maturity of 40 years. Final version provided a 95% guarantee on both old and new with a maximum maturity of 30 years.

• **Fanny Mae**—The second most controversial problem for the conferees was the Federal National Mortgage Assn. The Senate voted to continue the program of providing a secondary mortgage market, while the House accepted White House recommendations to provide for converting Fanny Mae to a privately held corporation. The idea, in keeping with White House policy of not using federal funds where private money is available, is to replace gradually over a period of six to 12 years the federal funds in FannyMae with private money.

Under the plan accepted by the conferees anyone selling mortgages to the agency would have to buy stock in the agency equivalent to 3% of the total value of the mortgage transaction. The federal government now holds $70-million in capital stock and Fanny Mae owns $3 billion in mortgages.

• **"Windfalls" and abuses**—As a result of Senate Banking Committee hearings now going on into so-called "windfall" profits, legislation was included in the bill designed to curb these abuses.

The conferees wrote in a 10% profit limitation on multi-family construction. This is the way it would work: On a project appraised at $1 million, the builder gets a $900,000 construction loan. Previously if he had been able to build for $800,000 he could mortgage out with a "windfall" of $100,000. But under the new limitation, if his building costs were $800,000 he would be allowed a profit of 10% or $80,000, for a total of $880,000, and he would be required to turn back $20,000 of the $900,000.



RUNWAY EXTENSION ON PONTOONS

Plan runway formed of bridge pontoons

Concrete pontoons for a floating bridge across Lake Washington east of Seattle first would be used temporarily to extend a runway of the Sand Point Naval Air Station under a novel plan developed to overcome Navy objections to location of the bridge at Sand Point.

Sand Point is generally agreed to be the best location for bridging the lake. The Navy has insisted, however, that the construction of the bridge be carried out without curtailing use of runways at the Air Station. No previous plan could have accomplished that because of the need to drive an approach tunnel to the bridge under the south end of one runway, blocking off 1,000 ft. of runway for 30 to 42 days while the tunnel work was in progress.

The new plan—prepared by Seattle city engineer W. E. Parker, King County engineer D. L. Evans and consulting engineer Homer M. Hadley—would compensate for the necessary blocking of the southern part of the runway by building a 1,000 ft. extension onto the northern end of the runway using pontoons for the bridge.

The pontoons would be bolted together, four abreast and joined to the end of the runway by a temporary fill. After the tunnel was completed and the runway restored, the pontoons would be towed into place to form the bridge. A pontoon bridge across the lake is planned because the depth of the lake (up to 100 ft.) make floating, anchored pontoons much cheaper than fixed piers.

Florida to market turnpike bonds

The Florida Turnpike Authority has taken formal action to sell $89 million in bonds for construction of a 110-mile toll turnpike from Fort Pierce to Miami.

The bond validation suit will be filed within a week or so in the Leon County circuit court at Tallahassee. The bonds will have a maximum maturity of 40 years and will bear interest not to exceed 5%. The issue will be three times as big as the largest bond issue ever sold in Florida.

The authority also has employed the engineering firm of Coverdale & Colpits of New York to compile results of its studies for a 200-mile northward extension of the Florida Turnpike to the Georgia border.

Parsons, Brinckerhoff, Hall & Macdonald of New York had previously estimated this 200-mile extension could be built for about $150 million. Two routes are under consideration, one close to the East Coast, the other through central Florida. A final report on the feasibility and cost of a state-long turnpike will be presented to the legislature at its session next spring.

Cost of the Fort Pierce-Miami turnpike originally was estimated at $62 million. The later upward revision to $89 million has drawn fire from LeRoy Collins, Democratic nominee for Governor, who has demanded a new close examination of the cost estimates.

School building ban off

Gov. James F. Byrnes of South Carolina last week removed the stop order on school construction imposed following the U. S. Supreme Court's historic anti-segregation decision to give localities a chance to re-survey and relocate already authorized facilities. The action cleared projects costing $14.3 million for contract letting.

Tudor's successor

Solicitor Clarence Davis is named undersecretary

Interior Department is to get a new undersecretary Sept. 1 when Solicitor Clarence A. Davis moves up to replace Ralph A. Tudor.

Davis, whose nomination went to the Senate last week, has been department solicitor since the Republicans moved in last year. Before that he practiced law in Beaver City, Neb., where he was active in water rights litigation. He is a former Nebraska Attorney General and a former general counsel for Consumers Public Power District, which is a political subdivision of the state engaged in production and distribution of electric power.

As principal legal adviser to Interior Secretary Douglas McKay, Davis has played a key role in formulating department power policy and has been a frequent speaker on power policy matters.

Tudor, a former district engineer in the Army Corps of Engineers, returns to his own engineering firm in San Francisco after serving more than a year as Interior undersecretary. Tudor came to Interior May 15 last year with the hope of spending no more than a year on the job. He agreed to stay on until after the congressional adjournment at the request of Secretary McKay.

During his short tour of duty, Tudor has coordinated various policy studies and is one of the chief architects of Republican power policy. He has also directed the reorganization of such agencies as Bureau of Reclamation and Southwestern Power Administration.

After making on-the-spot studies of such Interior projects as Eklutna in Alaska and the proposed Echo Park Dam in Colorado, he has appeared before Congress in their behalf.

Two turnpike authorities elect officers in Virginia

Two Virginia toll road authorities have held their first meetings and elected officers.

The Old Dominion Turnpike Authority, which will construct and operate a $75-million superhighway across the southwestern part of the state, named Sam D. May, a member of the State Highway Commission, its temporary chairman.

The Richmond-Petersburg Turnpike Authority, which will build and operate a $57-million link between the two cities, named William E. Wood, a Richmond utility executive, its chairman.

Ohio may fan the flames on unionization

Highway department follows example of turnpike authority by requesting contractors to provide surveying services.

Ohio again could become a storm center of the engineer unionization issue as a result of the State Highway Department letting roadbuilding contracts providing for field layout work by contractors' surveying crews.

A similar practice by the Ohio Turnpike Authority, which opened the door to a drive to organize personnel performing engineering functions for contractors, has led to a test case now before the National Labor Relations Board in Washington. The case pits the Ohio Society of Professional Engineers against locals of the International Operating Engineers Union in what may prove a milestone in the long-smoldering engineer unionization issue.

• **Based on personnel shortage**—Faced with the necessity of expediting a new multi-million-dollar road program, Ohio highway officials contend that the shortage of state engineers leaves them no alternative but to assign some of the surveying work to contractors. State engineers will locate and reference the centerline and establish bench marks, letting the contractors' engineers carry on from there.

"The department does not intend to continue the practice any longer than necessary," L. F. Schaeublin, Assistant State Highway Director, explained last week. At the same time, he acknowledged that field layout provisions would be contained in most contracts to be awarded the rest of this year and probably next. Four such contracts, requiring one or two surveying crews on the job up to several months, have been let to date.

• **Professional societies are skeptical**—Schaeublin tended to discount the possibility of unionization becoming a material issue among the survey crews in state highway projects because of the "emergency" nature of the policy. But professional engineer groups definitely don't share his optimism. They see the highway department's move as another "foot in the door" for the union.

And they go so far as to express fear that eventually there will be a demand that consulting engineer firms on a project be unionized with the prospect that even their blueprints might have to be certified as union-made before work is permitted to start.

Professional groups also are wary of the highway department's propensity for "semi-competitive" bidding on consulting engineer jobs. On some projects, the highway department is sending proposal sheets to as many as four firms, asking for cost estimates prior to undertaking negotiations. Thus far, 14 projects have been handled; negotiations on four others are pending.

• **Appeal made to NLRB**—The OSPE failed to dissuade State Highway Director Samuel O. Linzell from adopting the practice of allowing contractors to do field layout. However, the OSPE continues to spearhead the fight against unionization by means of action now before the NLRB.

This action stems from the refusal of L. Steward McCoy, who headed a surveying party for Terry & Wright of Louisville, Ky., a contractor on the Ohio Turnpike, to join Local 18 of the Operating Engineers Union (ENR March 18, p. 23; June 24, p. 23). The Terry & Wright job was struck for a brief period prior to a winter suspension of construction activity. McCoy has since been kept out of the field to avoid further strike action, pending a decision.

McCoy's action against the union suffered a rebuff on the NLRB regional level. His plea was dismissed by John L. Hull, Jr., Cleveland regional director, on the grounds that he was a supervisory employe and not an employe as defined in the act.

In appealing to the NLRB in Washington for a hearing, McCoy stated that conclusive action by the board is necessary to prevent a situation whereby "unions will be able illegally to subject contractors and their professional employes to forced unionization. . . ."

The new petition was accompanied by a statement that McCoy and the OSPE are prepared to carry the battle to Ohio courts if NLRB fails to act.

Congress acts on federal projects

Here is where legislation of interest to the construction industry stood early this week as Congress headed into what it hopes will be the last two weeks of the 83rd Congress:

• **Priest Rapids**—The Senate approved legislation already voted by the House that would clear the way for the project to be built by a public utility group in Washington State. As sent to the White House, the bill provides three utility districts may apply to Federal Power Commission for a license to build the $364-million project.

• **Santa Margarita**—House and Senate agreed on a bill providing for a $22-million dam on Santa Margarita River in Southern California. The dam will store water for the joint use of the Navy and Fallbrook, Calif., Public Utility District, with the Navy getting prior rights to all the water it needs. Funds for the project will be asked for next year.

• **Frying Pan-Arkansas**—Approved by Senate on July 10 on a call of the calendar, the project would divert 70,000-ac ft of water a year from the upper Colorado River Basin on the western slope of the Continental Divide to the Arkansas River Basin on the eastern slope. The $170-million project has been reported by House committee.

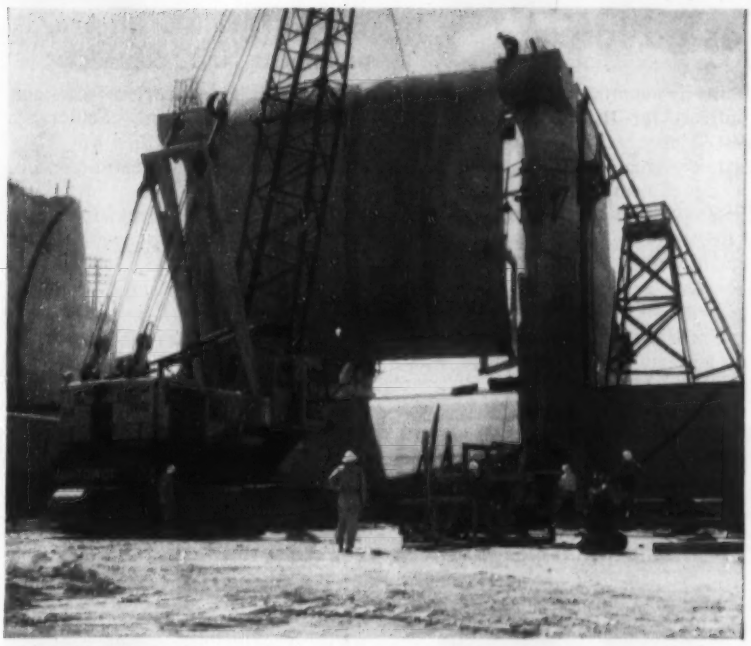
• **Santa Maria**—The Senate Interior Committee on July 10 reported a bill authorizing construction of this irrigation project in California. The $17-million bill passed the House last February, and now awaits Senate floor action.

• **Cougar Dam**—Senate Public Works Committee on July 9 reported this $37-million partnership project calling for construction of the dam and reservoir on the south fork of the McKenzie River in Oregon with participation for power by the city of Eugene, Ore. The bill passed the House in May.

• **Upper Colorado**—The $1-billion bill to develop a number of dams on the Colorado River and to provide irrigation and power in the upper basin state of Utah, Colorado, New Mexico, Wyoming and Arizona has been reported by the House Interior Committee. The Senate committee has ended hearings and now is working on the bill which it hopes to report out shortly. There's still hope for passage despite controversy raised by conservadespite over preservation or Dinosaur Monument, due to be inundated by one of the dams.

• **Vermejo project**—On July 17 the Senate passed on the consent calendar legislation authorizing construction of this Reclamation project in New Mexico. This cleared the House-passed bill for the White House.

• **Foster Creek** — House-Senate conferees filed a report calling for an authorization of $4,798,000 for construction of the Foster Creek irrigation works of the Chief Joseph Dam project in Washington. Senate agreed to the conference report on July 16 and House is expected to approve the report this week.



BIG TAINTOR GATE moves into final position at Dexter Dam.

Willamette basin dams near completion

Work is being pushed to completion at Lookout Point Dam on the middle fork of the Willamette River in Oregon and at the downstream Dexter reregulating dam. The two structures are the last Willamette basin projects called for in the 1938 and 1950 flood control acts.

At Lookout Point Dam, Morrison-Knudsen Co., Peter Kiewit Sons' Co. and Macco Corp., holders of the final major contract covering $20.7 million of work, are at the cleanup stage on the main structure. They also hold the contract for construction of the $3-million powerhouse.

Reservoir level is being raised to 872½ ft. above mean sea level—a depth of 112½ ft. behind the dam—in preparation for the first summer river control work. During August and September, the reservoir will be lowered by some 180,000 acre ft to assist in maintaining the Willamette's flow at downstream stations for navigation, stream pollution control and valley irrigation, according to S. R. Overholse, project engineer.

Initial tests of the three 38,000-kw generators being installed in the downstream powerhouse also are scheduled. Generators No. 1 and No. 2 are due on the line in October. A third unit for the total 114,000 kw name plate plant is slated for February, 1955.

Lookout Point spillway gates have not been installed but the earthfill portion of the 3,175-ft long structure has been finished. Some spillway concrete work remains on the 248.5-ft long section. Maximum height is 250 ft. The dam structure required 7,400,000 cu yd of earth embankment, 850,000 cu yd of concrete and 2,458,488 lb of steel reinforcement.

Work on the downstream Dexter Dam is scheduled to be completed in September. Power delivery is to begin in April, 1955. Principal contract is held by McNutt Brothers and C. V. Montag & Sons for $5 million.

Work at Dexter has brought on some innovations with on-site construction of taintor gates and use of pre-cast concrete members for crane bridges. The 44-ton taintor gates and 60- to 75-ton bridge sections were fabricated on the ground at the site and hoisted into place in one piece by a crawler crane equipped with a 120-ft boom.

The $90-million Willamette basin projects have been pushed at an annual rate of $21 million to $36 million, the 1952 peak. Fern Ridge and Cottage Grove dams were completed in 1941-42, and Dorena in 1949. These three are storage reservoirs only. Detroit Dam, the first with power units, was dedicated in June a year ago, and its downstream reregulating dam at Big Cliff is soon to put power on the line with a single 18,000-kw generator now being tested.

By next year only about $4 million of work will remain, principally at Lookout Point and Dexter. Several new projects have been proposed to keep the Willamette basin program from grinding to a dead halt in 1956. Among these are Hills Creek Dam upstream from Lookout Point, a project that would cost an estimated $32 million and take four years to build; Cougar Dam on the McKensie River, a "partnership" project with Eugene, Ore., Water and Electric Board paying for power facilities; and the Green Peter and White Bridge sites on the middle Santiam River, projects in which Pacific Power & Light Co. has indicated interest.

New water compact

Tennessee basin states plan pollution control

States of the Tennessee River Basin have drawn up a water pollution control compact which is expected eventually to include all seven states that have streams feeding into the Tennessee River.

The compact was approved at a meeting in Ashville, N. C., of representatives of five states—Tennessee, Georgia, Kentucky, North Carolina and Virginia. Alabama and Mississippi were not represented at the meeting but are expected to join in the compact.

The compact would set up a commission empowered to study water quality and make recommendations on water purity standards. In certain cases, the commission would have the power to issue cease and desist orders where compliance with approved water standards has not been achieved by the action of individual state pollution control agencies.

Enabling legislation approved by Congress will be necessary before the compact can go into effect. Legislatures of the various states must then ratify the compact. As soon as two or more basin states ratify it, the pact will go into effect.

The compact itself will not be subject to amendment by individual state legislatures, but many of its provisions are expressed in broad terms which could be carried out under individual state legislation to meet local conditions.

The compact commission would be comprised of three representatives from each of the ratifying states. Methods of appointing the representatives would be determined by the individual states.

Compact states would defray commission expenses on a formula including the state's percentage of basin population and the state's percentage of basin land area. It was estimated that under the formula Tennessee would contribute approximately 55% to 60% of the costs.

Three toll road ventures go forward

Two New England toll road ventures moved ahead last week with Connecticut awarding design contracts and Massachusetts announcing its readiness to award construction contracts. And, in the toll-conscious Midwest, Indiana expected to break ground for its project late next month.

• **Connecticut**—The highway commission has awarded contracts to five consulting engineer firms within the state for work on the $398-million Connecticut Expressway which will run 129 mi from the New York boundary to the Rhode Island line.

Highway Commissioner G. Albert Hill said the five firms are: Westcott and Mapes, New Haven; Newman E. Argraves and Associates, New Haven; John J. Mozzochi, Glastonbury; F. P. Molloy, West Hartford; and Loomis and Sullivan, Hartford.

Location surveys from the New York boundary through New Haven have been completed by state highway engineers, Hill said. Engineer consultants working in this area will design the highway, grade separations and stream crossings. Consultants working east of New Haven to the Rhode Island line will make the surveys and then proceed to the design work.

All of the consultants will furnish the engineering supervision and inspection of the construction work for their respective sections. All survey and design work must be completed within nine months to provide final plans by the end of April 1955, when the state expects to begin the advertising and award of construction contracts.

• **Massachusetts**—The turnpike authority is planning to let construction contracts for the $239-million east-west Massachusetts toll highway in relatively small amounts to improve chance of completion by the end of 1956.

Benjamin H. Grout, a member of the authority, said the contracts probably will average about $5 million each. At an average cost of about $1 million a mile, this would mean that the average contractor will do about five miles of the highway.

"Of course," he said, "that won't mean that every contract will be for a five-mile stretch of highway. Those places where the road is more complicated to build will be contracted for in shorter sections than the approximate five-mile average."

• **Indiana**—Groundbreaking on the first two sections of Indiana's $280-million, 156-mi east-west toll road is expected late next month or early in September. Earlier this year, the Indiana Toll Road Commission had hoped to get initial construction under way this month (ENR June 24, p. 38).

The two sections, totaling 7.3 mi in length, are located just west of South Bend. Options have been obtained for all rights-of-way in both sections of the four-lane divided toll road.

Design engineering plans will be processed and approved by the middle of this month, according to Harvey B. Harnden, of J. E. Greiner Co., general consultants for the commission. Advertising for construction bids could then be undertaken as soon as titles to the land are checked and the actual purchases completed.

Beautiful Ohio

The Ohio Turnpike Commission has let it be known that there'll be no unsightly billboards along its new super highway across the state.

The Commission was jarred by a ruling of the Ohio Supreme Court that it had no legal right to prevent the erection of billboards on privately-owned land bordering the highway, but Commission chairman James W. Shocknessy reported he had found other ways to handle the problem.

Shocknessy said the commission had obtained voluntary agreements from 95% of the property owners located along the right-of-way not to erect billboards. And in case any billboards do appear, Shocknessy said the Commission would block them out by a little strategic planting of trees and bushes.

Large Dam Congress scheduled for Paris

The preliminary program and notice of the study tours of the Fifth International Congress on Large Dams, which will be held in Paris, France, starting May 31, 1955 are now available from the U. S. Committee on Large Dams, Box A-A, Boulder City, Nevada. Meetings will be held in Paris until June 4, followed by a week of study tours in France and an additional week in North Africa.

Attendance at the congresses of the International Commission on Large Dams, usually held every three years, is limited to members of the national committees of each country. Information on membership on the U. S. Committee can be obtained from the above address or from L. N. McClellan, Denver Federal Center, Denver.

Edward P. Palmer stricken, prominent N. Y. contractor

Edward P. Palmer, 69, a partner in the construction firm, Senior & Palmer, of New York, died July 12 of a heart attack at his home in Stamford, Conn.

He had been prominent in the construction industry since his graduation from Swarthmore College in 1906. He participated in the construction of some of New York's first subways.

Last year he received the Moles Award for outstanding achievement in the construction field. He was a former president of the Associated General Contractors of America and a member of the American Society of Civil Engineers and the Engineers Club.

Jobs in the news

SKYSCRAPER—Seagram-Distillers Corp., New York, will build a 34-story, $15-million office building on Park Ave., New York City. Pereira & Luckman, New York, are the architects.

DELAWARE BRIDGE—American Bridge Division of U. S. Steel Corp. has been awarded an $11-million contract to build the superstructure of the Delaware River Bridge connecting the Pennsylvania and New Jersey turnpikes.

HOUSTON DEVELOPMENT — Frank W. Sharp, Houston contractor, is planning a $200-million residential development that will include 15,000 homes, shopping facilities, schools, churches and two country clubs. Development will be located on a 4,000-acre tract just outside Houston and will require 10 years to complete. Its potential population of 60,000, will make it the world's largest residential development.

AIR BASES—The Air Force will spend an estimated $38 million for rehabilitation and expansion of the Seymour Johnson Air Base at Goldsboro, N. C. New construction will include hangars, runways, barracks and an administration headquarters building. Reconstruction of the Homestead Air Force Base, near Miami, Fla., will get under way soon. Bids will be opened Aug. 12 on a headquarters building, an officers mess and an administration building. Bids for 26 new buildings will be called Aug. 24. Total estimated cost is $50 million.

AFL HEADQUARTERS—The American Federation of Labor will build a $3-million air conditioned headquarters in Washington, D. C. The building will be nine stories tall with two basements and will have 143,000 sq. ft. gross floor space. Architects are Voorhees, Walker, Foley & Smith, New York. George A. Fuller Co. is the contractor.

Welfare, wage demands hit two areas

Georgia cities tied up as building trades battle employers—new negotiating methods may cause California strike

Virtually all construction work in Atlanta and other major Georgia cities remained at a standstill for the third straight week this week as building trades unions slugged it out with contractors over wage increases and welfare benefits.

And in 11 Southern California counties, negotiations between labor and contractors limped badly toward some sort of a climax over similar demands, a strike call set for this week.

At issue in Georgia were union demands for a 25-cent-per-hour wage increase, plus varying amounts for welfare benefits—the steamfitters, for example, were demanding an additional 2½-cent welfare payment (to add to an existing 7½-cent payment) and 25 cents an hour in pay.

Construction sources in the state told ENR's reporters that something like $70 million of construction work already has been affected by the walkout, and while the strike tended to localize in Atlanta and larger cities, it showed signs of spreading to other southern cities like Jacksonville and Nashville, Tenn., and Mobile, Ala.

Crux of the battle was the apparently adamant refusal of the Georgia Branch of the Associated General Contractors to budge from its offer of a renewal of the previous contract—with no raise and no reduction in wages. Both sides were using newspaper and other publicity means to strengthen their case with the public: The contractors charging that high labor costs were already forcing them to lose jobs to outside-the-state contractors; labor charging that local builders are insisting on too high a profit margin, and thus pricing themselves out of the market.

Only two minor breaks had appeared in the solid contractor front as the week began: asbestos workers accepted a 5-cent hourly wage increase plus 7½ cents for welfare; plumbers were on the verge of accepting a contract that left negotiations on increases and welfare open for later negotiation.

• **California troubles**—In their traditional negotiations with AFL unions in Southern California, contractors blamed an unusual situation for failure to reach agreement: at labor's demand, they had to deal separately with six basic trades, rather than all 19.

The result is a confused picture, and whether the final result will be a contract or a strike was touch-and-go. There were rumors of impending strikes by carpenters and teamsters after the reported turndown of a "final offer" by contractors of 10 cents an hour in wages and welfare.

However, the same deal has been approved by laborers and cement masons; and a 9-cent to 12-cent increase for operating engineers has been accepted by union representatives.

Labor briefs . . .

• **Organizing in Hawaii**—AFL carpenters are pushing an active organization campaign in Hawaii, including picketing of work on a new hotel and the University of Hawaii, and several business buildings in Honolulu.

• **End Madison strike**—A general 10-cent-an-hour wage raise ended a month-long strike at Madison, Wis., that had idled more than 2,000 building tradesmen.

• **Little Rock troubles** – With contractors apparently set to stand firm on their refusal to grant wage increases demanded by three unions (carpenters, ironworkers and cement finishers), a partial strike continued at Little Rock, Ark.

Seek employer negotiating cooperation

Homebuilders move for setup to exchange information with heavy contractors on mutual labor problems

The National Association of Home Builders is promoting a new program for the exchange of labor information in the construction industry.

The homebuilders recently named a five-man team—members of its labor advisory committee—to sound out the Associated General Contractors on a policy of joint discussion and sharing of data on mutual labor problems. The idea is to keep both organizations abreast of new wage settlements, state labor laws affecting construction, strikes, etc.

Cooperation, under the NAHB plan, would be at the local level, where contractors sometimes face the same unions across separate bargaining tables. However, it would not be aimed at setting up joint bargaining nor would the program be extended to the national level.

The AGC and NAHB are by no means parallel in the labor-management field. AGC is involved primarily in commercial construction, which is highly organized by the AFL building trades. Labor costs are generally uniform through area-wide settlements. The homebuilders, on the other hand, deal less with union labor (about half the association's members use non-union workers). Negotiated pay raises effect the individual builder.

The proposed joint conference has not been set up yet, and the program may be difficult to work out because of the varied approaches to labor problems of the two associations. However, NAHB hopes to provide a method of sharing labor information to aid each group when it gets into negotiations.

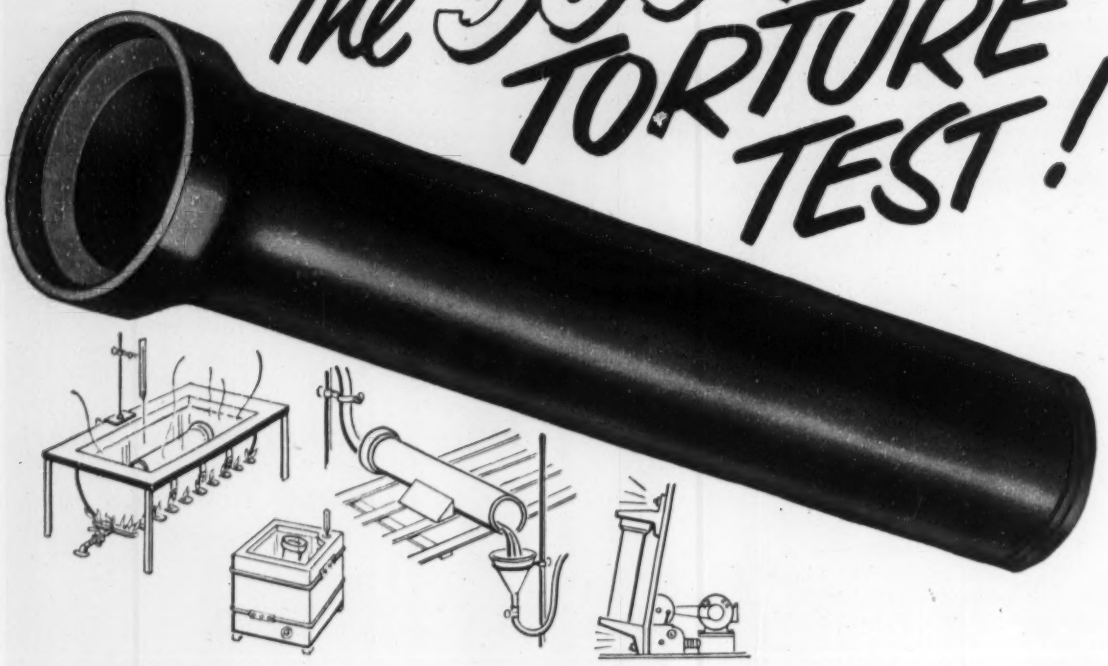
However, since wherever homebuilders come into contact with union labor they are usually faced with existing contracts and rates that were set up by the heavy construction contractors, they have started to resort to bargaining with labor organizations.

This action has brought many elements of the employer group in construction into the position of being whipsawed by labor negotiators—who thus have two groups with which to bargain, and to play against each other for the best possible contract.

General contractors have feared that homebuilders—who usually operate on small margins and are in direct contact with the buying public—will give in quickly to what may be out-of-line labor demands, because they cannot afford the consequences of any prolonged work stoppage. Homebuilders, on the other hand, claim that the heavy contractors often set up conditions of work that they cannot meet.

Four of the five committee members picked to date are: Ben Goldberg, president of the homebuilders association in St. Louis, Mo.; A. C. Dohrmann, Sioux City, Iowa; Joseph Busch, Grosse Point, Mich., and Earl Hortter, Kansas City, Mo.

This section of **CLAY PIPE** has just taken the 500-YEAR TORTURE TEST!



SCIENTISTS at the N.C.P.M.I. research laboratories in California have been trying for years to find some worn-out Clay Pipe. They wanted just one worn-out length, so they could study it and determine how to make it better.

They looked everywhere. They dug up Clay Pipe that had been in service for 50, 100, and 150 years — but it was still in first-class condition. They wrote letters to all parts of the country, without success. Finally they decided to wear out a brand-new section in the lab.

Clay Pipe in service is often subjected to alkaline ground waters — so they boiled it in a concentrated solution of corrosive alkali. Then they soaked the same length in sulphuric acid for a week, to duplicate the corrosive effects of sewage gases. For good measure, they ran a stream of hydrochloric acid through it for another week. Then they half filled it with gravel, plugged up the ends, and put it in a machine that shook it like a cocktail, to see what effect years of abrasion might have on the inner walls. They soaked it in successive solutions of hot detergent, sea water, and the 16 most common industrial wastes.

After the test — roughly equal to 500 years of sewerage torture — they checked its dimensions, absorption, and crushing strength. *It was still as strong and round, as hard and smooth, as the day it was made.*

In the lab or in the ground, Clay Pipe is the *only* pipe that never wears out. Insist on it when you want permanent sewerage protection.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

1520 18th St. N.W., Washington 6, D. C.

311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.

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Observed weather in 20 cities, compared with normals

	Precipitation, inches				Temperature, degrees			
	June 1954	Departure fr. normal	6 mos. 1954	Departure fr. normal	Mean June '54	Departure fr. normal	Av. daily Maximum	Av. daily Minimum
Atlanta	2.08	−1.94	16.17	−8.50	78.0	+0.3	88.8	67.1
Baltimore	0.15	−3.37	12.35	−9.05	72.4	+0.2	83.8	61.0
Birmingham	1.93	−2.28	21.59	−7.47	79.2	+1.8	94.7	66.6
Boston	2.78	−0.70	31.37	+11.66	66.6	−0.6	74.2	59.0
Chicago	4.27	+0.12	18.95	+2.22	75.7	+6.3	86.3	65.0
Cincinnati	5.93	+1.88	17.29	−4.00	74.7	+1.9	85.8	63.5
Cleveland	1.38	−1.67	19.85	+3.95	72.1	+2.7	83.0	61.2
Dallas	2.90	−1.45	15.92	−4.27	83.8	+1.9	94.9	72.7
Denver	0.30	−1.15	1.94	−5.77	70.8	+3.5	84.8	56.7
Detroit	2.97	+0.07	16.11	+0.05	71.3	+3.2	81.1	61.4
Kansas City	3.64	−1.38	15.14	−3.00	79.2	+3.8	88.9	69.5
Los Angeles	0.08	+0.01	10.80	+1.19	67.6	−0.2	76.1	59.0
Minneapolis	4.71	+0.45	13.45	+0.99	71.2	+0.3	81.0	61.4
New Orleans	5.10	−0.47	19.70	−12.27	82.7	−0.8	90.7	74.7
New York	1.52	−2.18	13.75	−14.45	70.3	+0.5	78.4	62.1
Philadelphia	3.23	−0.74	17.45	−4.80	72.9	+0.3	81.8	63.9
Pittsburgh	4.37	+0.54	18.87	−2.42	72.2	+0.5	82.0	62.3
St. Louis	2.75	−1.50	11.78	−8.08	79.6	+3.8	89.2	70.0
San Francisco	0.14	−0.01	11.16	−1.79	58.5	−0.1	65.3	51.7
Seattle	1.49	+0.24	21.71	+5.62	58.1	−3.7	65.1	51.0

30-DAY WEATHER OUTLOOK

Mid-July to mid-August

by U. S. Weather Bureau

Precipitation range in 20 cities, in inches

Table shows range observed 33.3% of time. Rainfall heavier 33.3% of time, lighter 33.3% of time.

Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

City	July	Mid. July-Mid. Aug.	Aug.	Mid. Aug.-Mid. Sept.	Sept.	Mid. Sept.-Mid. Oct.	Oct.	Mid. Oct.-Mid. Nov	Nov.	Mid. Nov.-Mid. Dec.	Dec.	Mid. Dec.-Mid. Jan.	Jan.	Mid. Jan.-Mid. Feb.
Atlanta	2.99/4.80	2.89/4.90	2.79/5.00	2.24/4.30	1.69/3.60	1.64/3.25	1.59/2.90	2.01/3.35	2.43/3.85	2.94/4.58	3.46/5.30	3.42/5.32	3.39/5.33	3.38/5.50
Baltimore	2.61/4.98	2.91/5.32	3.20/5.66	2.65/4.51	2.10/3.36	1.88/3.57	1.66/3.77	1.61/3.44	1.56/3.12	1.99/3.43	2.41/3.73	2.59/3.85	2.77/3.96	2.57/3.68
Birmingham	3.94/5.53	3.44/5.39	2.92/5.25	2.32/4.47	1.71/3.69	1.62/3.14	1.52/2.58	1.84/3.24	2.17/3.91	2.94/4.83	3.71/5.75	3.75/5.58	3.75/5.40	3.61/5.64
Boston	2.61/4.02	2.60/4.36	2.59/4.70	2.32/4.20	2.04/3.70	2.26/3.88	2.49/4.07	2.62/4.26	2.74/4.46	2.82/4.33	2.89/4.20	2.83/4.12	2.77/4.05	2.70/3.99
Chicago	2.49/3.65	2.31/3.65	2.13/3.65	2.11/3.70	2.09/3.75	1.85/3.42	1.59/3.10	1.59/2.95	1.59/2.80	1.46/2.62	1.32/2.45	1.30/2.28	1.29/2.10	1.40/2.16
Cincinnati	2.39/3.70	2.32/3.95	2.24/4.20	2.02/3.64	1.79/3.08	1.64/2.99†	1.49/2.90	1.74/3.28	1.99/3.67	2.14/3.48	2.29/3.28	2.32/3.54	2.34/3.80	2.07/3.40
Cleveland	2.47/4.08	2.15/3.84	1.83/3.60	2.07/3.51	2.30/3.41	2.03/3.29	1.74/3.16	1.79/2.97	1.82/2.77	1.76/2.68	1.70/2.56	1.65/2.58	1.59/2.60	1.55/2.52
Dallas	1.39/3.00	1.30/2.89	1.22/2.78	1.50/2.94	1.77/3.10	1.66/3.30	1.55/3.50	1.60/3.25	1.64/3.00	1.36/3.00	1.09/3.00	1.24/3.05	1.39/3.10	1.49/2.70
Denver	1.21/2.00	1.04/1.86	0.87/1.73	0.60/1.39	0.52/1.05	0.57/1.08	0.62/1.10	0.46/0.89	0.29/0.68	0.34/0.72	0.39/0.77	0.28/0.64	0.18/0.50	0.26/0.54
Detroit	2.09/3.70	1.94/3.54	1.79/3.38	1.80/3.41	1.82/3.44	1.72/3.02	1.63/2.60	1.70/2.66	1.77/2.73	1.70/2.66	1.64/2.60	1.63/2.50	1.62/2.40	1.56/2.45
Kansas City	2.77/4.69	2.74/4.84	2.70/5.00	2.84/5.00	2.99/5.00	2.34/4.54	1.69/4.07	1.48/3.21	1.27/2.35	1.02/1.95	0.77/1.55	0.68/1.48	0.59/1.42	0.80/1.66
Los Angeles	0.00/T	0.00/T	0.00/T	0.00/0.02	T/0.03	0.08/0.32	0.15/0.60	0.20/0.95	0.26/1.30	0.70/2.00	1.14/2.70	1.19/3.00	1.24/3.30	1.12/3.25
Minneapolis	2.14/4.00	2.16/3.85	2.19/3.70	2.24/3.78	2.29/3.85	1.79/3.15	1.29/2.45	0.98/2.01	0.67/1.57	0.62/1.44	0.57/1.30	0.60/1.19	0.64/1.08	0.58/1.08
New Orleans	5.37/7.40	4.90/7.08	4.44/6.75	3.78/6.12	3.11/5.50	2.55/4.81	1.99/4.12	2.34/4.40	2.69/4.67	2.96/4.92	3.24/5.17	3.36/5.28	3.49/5.40	3.14/5.05
New York	3.26/4.70	2.99/4.95	2.72/5.20	2.46/4.30	2.21/3.40	2.15/3.76	2.09/4.13	2.15/4.04	2.21/3.95	2.42/3.86	2.64/3.77	2.55/3.71	2.46/3.65	2.41/3.88
Philadelphia	3.19/4.37	2.99/4.91	2.79/5.45	2.44/4.62	2.09/3.90	2.04/3.85	1.99/3.80	2.18/3.65	2.36/3.50	2.50/3.70	2.64/3.90	2.60/3.80	2.57/3.70	2.57/3.69
Pittsburgh	2.72/4.50	2.52/4.15	2.32/3.80	2.20/3.30	1.87/2.80	1.98/3.00	2.09/3.20	1.96/2.96	1.84/2.72	1.96/3.00	2.09/3.27	2.12/3.20	2.14/3.13	1.96/2.98
St. Louis	2.41/4.25	2.28/4.18	2.14/4.11	2.12/3.84	2.09/3.58	1.89/3.42	1.69/3.25	1.78/3.28	1.86/3.30	1.70/3.05	1.64/2.80	1.52/2.75	1.39/2.70	1.48/2.80
San Francisco	0.00/0.01	0.00/0.00	0.00	0.00/0.13	0.00/0.26	0.10/0.78	0.19/1.20	1.12/2.25	1.04/3.30	1.62/4.28	2.19/5.25	2.34/5.12	2.49/5.00	2.24/4.86
Seattle	0.19/0.67	0.18/0.78	0.18/0.90	0.62/1.55	1.07/2.20	1.70/2.85	2.32/3.50	3.07/4.55	3.82/5.60	4.00/5.74	4.17/5.89	4.14/5.57	4.12/5.25	3.34/4.92

T—Traces (Less than 0.005 inches) † Lexington

Mean temperature range in 20 cities, in degrees F.

Table shows range observed 25% of time. Mean temperature higher 37.5% of time, lower 37.5% of time.

Computed by U. S. Weather Bureau (based on historical records of actual temperature)

City	July	Mid. July-Mid. Aug.	Aug.	Mid. Aug.-Mid. Sept.	Sept.	Mid. Sept.-Mid. Oct.	Oct.	Mid. Oct.-Mid. Nov.	Nov.	Mid. Nov.-Mid. Dec.	Dec.	Mid. Dec.-Mid. Jan.	Jan.	Mid. Jan.-Mid. Feb.
Atlanta	79.0/79.9	78.9/79.9	78.0/79.1	76.3/78.1	72.9/75.4	68.2/70.2	62.3/63.8	56.6/58.2	51.1/52.7	46.6/48.4	44.0/46.0	48.3/50.3	43.5/45.5	44.0/46.4
Baltimore	76.2/77.5	75.5/77.3	73.6/75.7	71.1/73.3	67.1/69.4	62.2/64.4	56.4/58.3	50.9/52.6	45.6/47.0	40.2/42.0	35.8/37.8	34.2/36.1	32.9/35.7	32.4/36.0
Birmingham	78.9/80.0	79.0/80.3	78.5/79.8	76.6/78.5	73.3/75.6	68.5/70.7	62.2/64.2	56.2/58.5	50.7/53.2	46.5/48.9	44.3/46.5	43.4/46.1	43.5/46.5	44.4/47.6
Boston	71.7/73.0	72.1/73.4	70.9/72.1	67.6/69.2	63.3/65.4	58.9/61.0	54.2/56.2	49.3/51.3	43.6/45.6	36.8/39.2	31.2/34.0	28.9/31.9	27.9/31.2	26.4/29.6
Chicago	73.7/75.1	73.8/75.4	72.0/73.7	68.8/70.7	64.5/66.7	59.3/61.7	52.8/55.3	45.9/48.6	38.6/41.5	31.2/35.0	25.7/30.3	23.7/28.5	23.2/28.1	23.1/28.1
Cincinnati	74.1/75.8	73.9/75.7	72.5/74.4	70.2/72.1	66.5/68.4	61.2/63.3	54.9/57.1	48.6/50.9	42.0/44.5	35.9/39.1	31.4/35.2	30.1/34.4	29.8/34.6	29.9/34.4
Cleveland	72.7/74.2	72.5/74.2	70.9/72.7	68.5/70.6	64.7/67.1	59.5/61.8	53.5/55.6	47.1/49.3	40.5/42.7	34.3/37.2	29.3/32.9	27.3/30.9	26.9/30.5	26.0/29.6
Dallas	84.5/86.4	85.6/87.3	85.1/86.7	82.3/83.9	78.1/79.7	73.8/75.1	68.5/69.4	61.4/63.1	54.3/56.7	49.9/52.3	47.0/49.3	44.8/47.1	44.1/47.5	45.8/49.2
Denver	72.1/73.7	72.5/74.0	70.8/72.2	67.3/68.6	62.2/63.4	56.7/58.3	50.8/52.8	44.5/47.2	38.0/41.4	33.5/36.7	30.5/33.5	28.3/31.4	27.0/30.0	27.9/31.5
Detroit	72.5/73.5	72.3/73.6	70.5/72.0	67.5/69.5	63.0/65.6	57.8/60.2	51.9/54.1	45.8/47.9	39.2/41.1	32.9/35.3	27.9/30.9	25.6/28.5	23.8/27.7	24.2/27.8
Kansas City	80.0/81.5	80.2/81.8	78.4/80.1	74.6/76.6	69.7/71.9	64.4/67.0	58.1/61.2	50.7/53.9	42.6/45.9	36.7/40.1	32.4/35.9	30.4/33.0	30.0/31.9	30.2/33.6
Los Angeles	66.9/68.4	67.5/68.9	67.4/68.6	66.8/68.1	65.9/67.3	64.4/65.9	62.7/64.2	60.5/62.1	57.9/59.8	56.5/58.2	54.9/56.5	53.4/54.8	52.7/54.0	52.6/54.3
Minneapolis	72.9/74.9	73.2/75.0	70.8/72.3	66.3/68.4	61.0/63.6	55.5/58.3	48.8/51.7	40.6/40.3	30.9/36.0	22.5/28.1	16.2/22.3	13.8/18.4	13.4/16.5	13.3/17.7
New Orleans	81.4/82.3	81.8/82.7	81.8/82.7	80.8/81.9	78.5/79.7	75.1/76.5	70.5/71.9	64.6/66.8	59.0/61.9	56.0/58.5	54.6/56.8	53.2/56.0	52.6/56.0	54.0/61.4
New York	75.2/76.3	75.1/75.5	73.6/74.9	71.0/72.5	67.4/69.0	62.7/64.3	57.0/58.6	51.8/53.2	46.5/47.9	40.2/42.3	34.6/37.5	32.5/35.2	32.0/34.6	30.9/33.6
Philadelphia	75.5/76.6	75.1/76.3	73.3/74.5	70.6/72.1	66.8/68.5	61.6/63.5	55.6/57.6	50.3/52.3	45.3/47.2	39.9/42.0	35.1/37.3	32.7/35.4	31.8/35.0	31.1/34.3
Pittsburgh	71.4/72.8	71.0/72.4	69.3/70.9	67.2/68.9	64.0/65.9	58.8/60.9	52.0/54.4	46.2/48.2	40.3/42.0	34.0/36.4	29.5/32.6	27.8/31.0	26.9/30.1	26.4/30.5
St. Louis	78.7/80.2	78.5/80.1	76.7/78.5	73.6/75.6	69.1/71.2	64.0/6.63	58.1/60.5	51.0/53.9	43.6/46.9	37.6/41.2	33.3/37.1	30.9/35.1	30.1/34.7	31.3/35.7
San Francisco	59.7/60.9	59.5/60.7	60.1/61.2	60.9/62.2	61.3/62.8	60.4/62.0	58.5/60.2	57.9/59.9	53.8/55.0	50.9/52.3	48.7/50.2	47.1/48.9	46.9/49.1	47.3/50.8
Seattle	63.6/64.6	63.8/65.0	62.7/64.1	60.8/62.0	58.0/59.0	54.8/56.1	51.0/52.5	41.8/43.3	43.1/44.5	41.0/42.4	39.4/40.7	37.7/39.0	37.2/38.5	38.2/40.0

Reports from Users

TEXAS ALUMINUM PLANT

"We compacted 380,000 cu. yds. of clay fill to 95% with twenty Rammers in six months. No other equipment would produce required compaction and only the Barco Rammer permitted us to finish the job on schedule."—*Consolidated Western Steel Division, Port Lavaca, Texas.*

CALIFORNIA PROJECT

"We had an occasion to compare the Rammer along with two other machines and it was surprising how much more material the Barco Rammer would handle."—*Westway Excavating Co., West Los Angeles, Calif.*

MIDWEST WATER LINE

"The Barco Portable Gasoline Rammer has fulfilled our expectations 100%. It is now in use on a 32,000 foot Water Line Project and is doing a magnificent job in keeping up with our backfilling requirements."—*Jones Contracting Co., Detroit, Mich.*

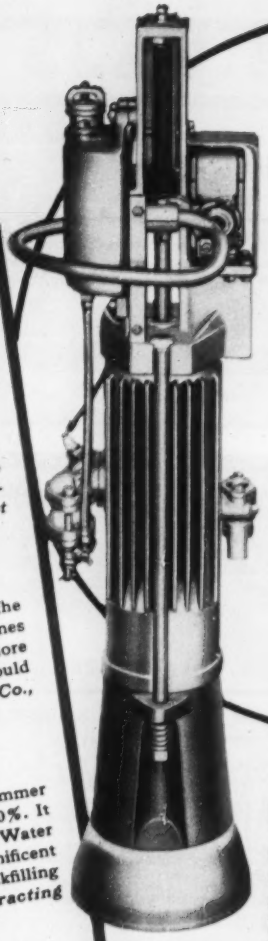
HOUSING PROJECTS

"Soil compaction with the Barco Rammer has been the key to earlier completions and lower costs for us."—*Paul Schleicher & Sons, Gary, Ind.*

OHIO TURNPIKE

"Exceptional time and labor is saved in the speed of the Barco Rammer with comparison to our previous method . . . We found it difficult to meet the rigid specifications required by the Ohio Turnpike Commission until we instituted the Barco Rammer, and can recommend it very highly to any organization having to meet specifications."—*Angell Construction Co., East Lansing, Mich.*

This photograph shows a Barco Rammer working on the Trenton Freeway in New Jersey.



WHEN YOU'RE UP AGAINST A TIGHT SCHEDULE—

ONE of the most important advantages users get with Barco Rammers for *soil compaction* is ability to handle big jobs in minimum time. When time is at a premium, BARCO PERFORMANCE PAYS DIVIDENDS!

Time after time, it has been proven that no other type of equipment can match BARCO PERFORMANCE. The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. On area tamping, where specifications call for 95% to 97.5% (modified Proctor) compaction, one man can average 20 to 30 cubic yards of fill per hour, day after day.

If you are not already using the Barco Rammer for soil compaction work, find out about it now! *Worldwide Sales and Service.* BARCO MANUFACTURING COMPANY, 514H Hough St., Barrington, Ill.

BARCO RAMMER

For Soil Compaction Close to Walls, Culverts, and Abutments—in Trenches, Ditches

LONG TAILRACE EXCAVATION extends 8,000 ft through rock of rapids below damsite. Electric shovel has 7 cu yd bucket.

Lots of digging downstream

Tailrace and powerhouse excavation totals over million yards of granite at Roanoke Rapids Dam—Job-built drill carriage speeds work

The best way to develop head of the Roanoke River at Roanoke Rapids, N. C., was to put a relatively low dam at the head of the rapids and then gouge out a deep tailrace 8,000 ft long. The dam contains just over a quarter-million cubic yards of concrete; powerhouse and tailrace excavation totals more than a million yards of solid granite.

(Roanoke Rapids will be remembered as the hydro site long contested through FPC and the courts by the previous administration's Interior Department.)

The powerhouse being built now for Virginia Electric & Power Co. will go into a 70x230-ft hole carved as deep as 72 ft. The 8,000-ft tailrace is 80 ft wide and 56 to 31 ft deep, and it, too, is being cut out of granite.

All this excavation was justified in order to get full hydraulic advantage out of the long rapids at the least cost. A 74.5-ft operating head will drive four 35,000-hp turbines.

Total cost of the project will approximate $33 million, and roughly one-tenth of that will have been spent on excavation—at about $3 per cu yd.

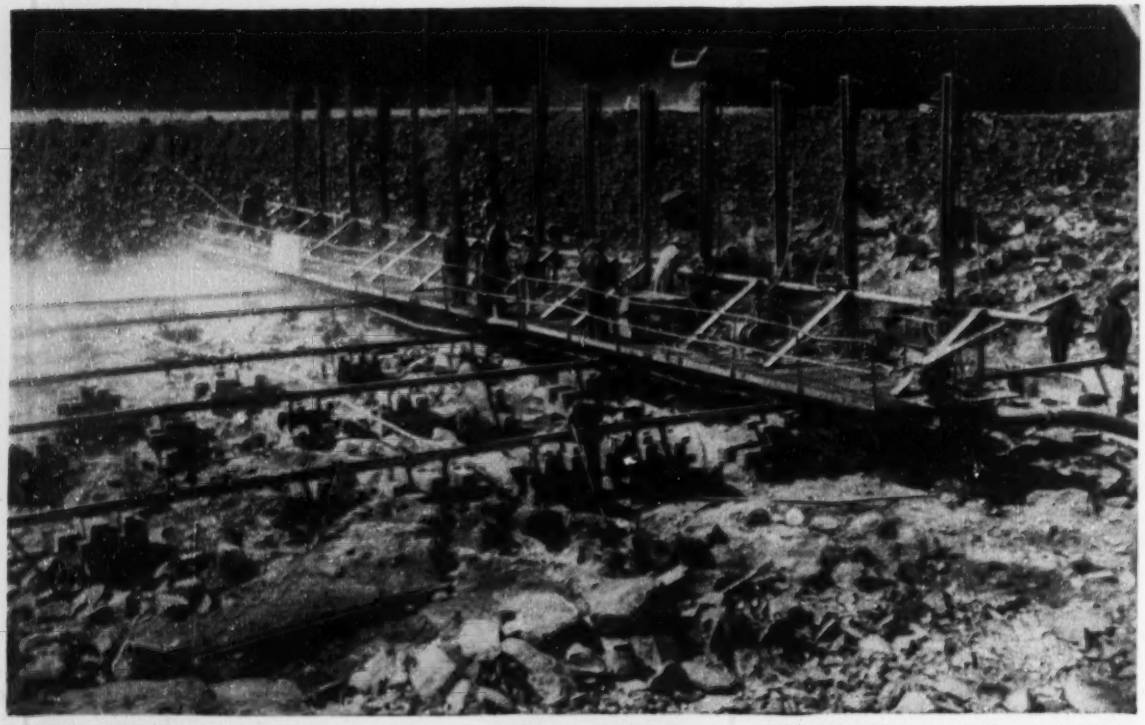
The contract for engineering and construction was placed with Stone & Webster Engineering Corp., Boston, with Charles T. Main Inc., Boston, as associate engineers. The major subcontractor, Central Engineering and Construction Corp., of Durham, N. C., is excavating the tailrace and clearing 5,000 acres that extend some eight and one-half tough miles upstream. It will be a difficult lumbering job because of the many small islands and the trees and brush that grow in the river. Central Engineering's total contract is for $3.3 million.

• **Excavation ingenuity**—With rock excavation such a major item on this job, it was to be expected that the tailrace subcontractor would come up with some interesting methods. He did:

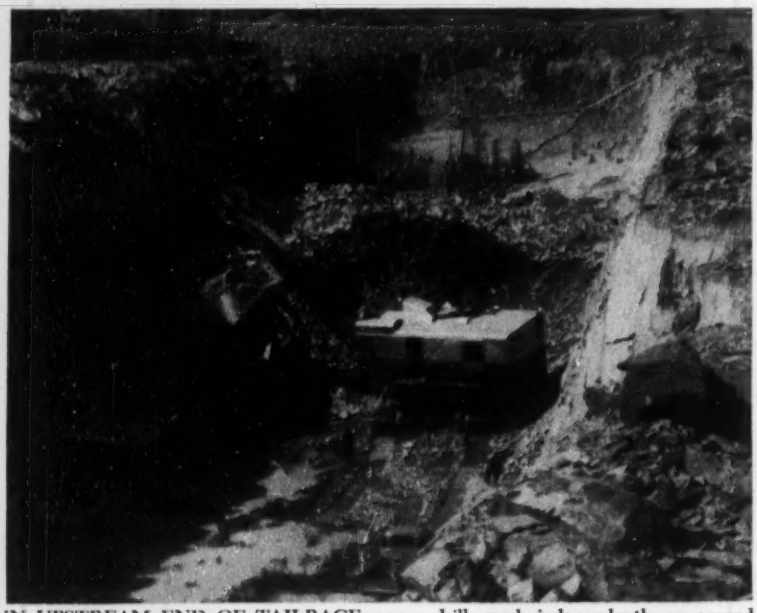
(*Continued on page 32*)

ENR staff photos

DEEP powerhouse hole goes down 72 ft into rock by drill-blast-muck method.



14-DRILL "JUMBO" is subcontractor's way of speeding tailrace work. Whole carriage slides ahead on rails for drilling first-lift holes.



IN UPSTREAM END OF TAILRACE wagon drills work independently on second lift as blasted muck is loaded for haul.

A drill carriage mounting 14 wagon drills abreast has been shoved along on rails to drill blast-holes for the first lift of the 80-ft wide tailrace through its 8,000-ft length. This rig, a kind of jumbo for moving the wagon drills along simultaneously (see photo) is moved on blocked-up rails and positioned to drill 24-30-ft blast holes.

The pattern of holes is 5 to 7-ft centers and each blast breaks up a 24 ft depth over 40 ft x 102-ft in area. After the first lift has been blasted and mucked clean, the rock surface is too rough and uneven for further use of the jumbo, and individual wagon drills are moved independently through the second-lift blast hole positions.

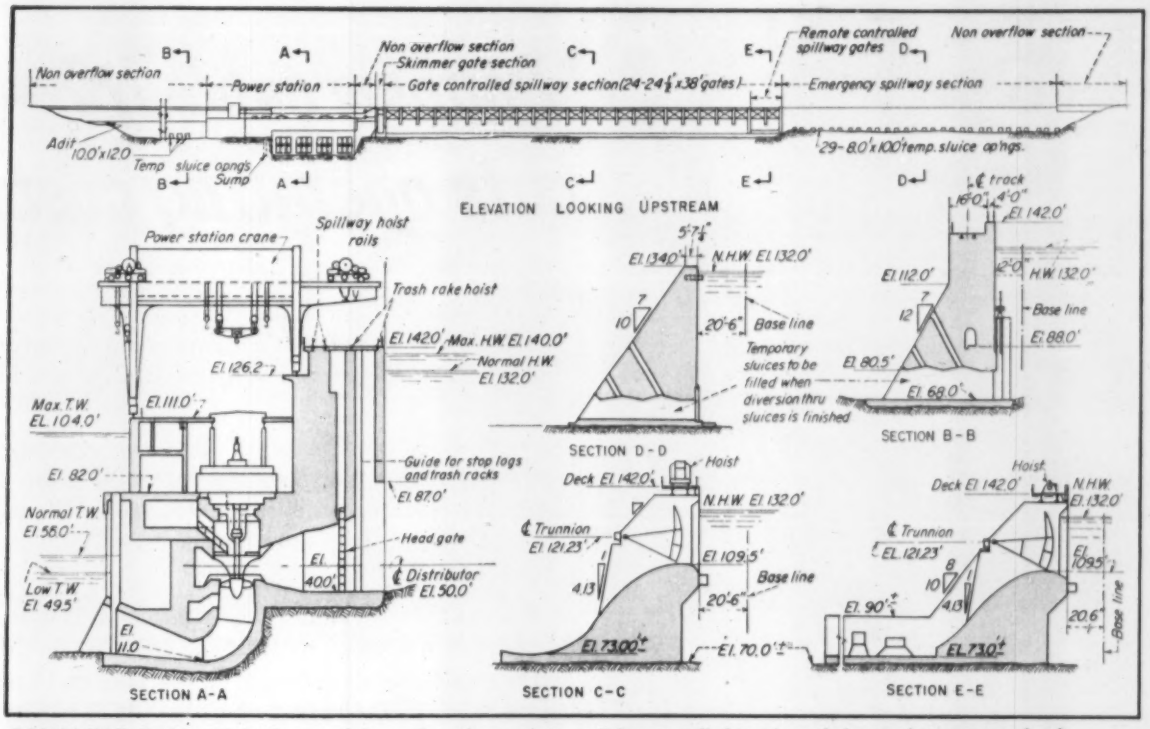
Second and third lifts have been blasted to bring the tailrace excavation down to its greatest depth (56 ft at the upstream end) and a 7-cu yd electric shovel has been used down in the tailrace for loading rear dump trucks that haul out the muck.

• **Outside aggregate**—Granite excavated from the tailrace and the powerhouse sites isn't suitable for use as aggregate for the dam. Stone & Webster had to buy aggregate from outside suppliers, and build 8,300 ft of railroad track to bring concrete materials to storage piles. A reclaiming tunnel, in which rides a belt conveyor, feeds the batching plant. (Excavated material was used, however, in a dike built parallel to the tailrace to keep out the river's flow.)

Concrete for the 3,000-ft-long dam, made of the purchased aggregate sized to 6 in., has 1,800-psi strength inside and 2,500-psi near the structure's faces. The mixing plant is capable of turning out 5,000 cu yd per day or better. A mix of 2.8 bags per cu yd is used for the 1,800-psi concrete; 3.75 bags for the 2,500-psi. The 2.8-bag mix is actually making 1,500 to 1,700 psi concrete in 7 days. Froehling & Robertson, Inc., of Richmond, Va., have set up their lab at the job as concrete control technicians.

Cement, hauled in by rail in bulk, is moved to silo storage on an air slide (an inclined conduit with canvas dividing it in two; air moves to the conduit under the canvas divider, causing cement to slide along on its top side).

• **Slow start**—There are 1,500 men working at Roanoke Rapids now on



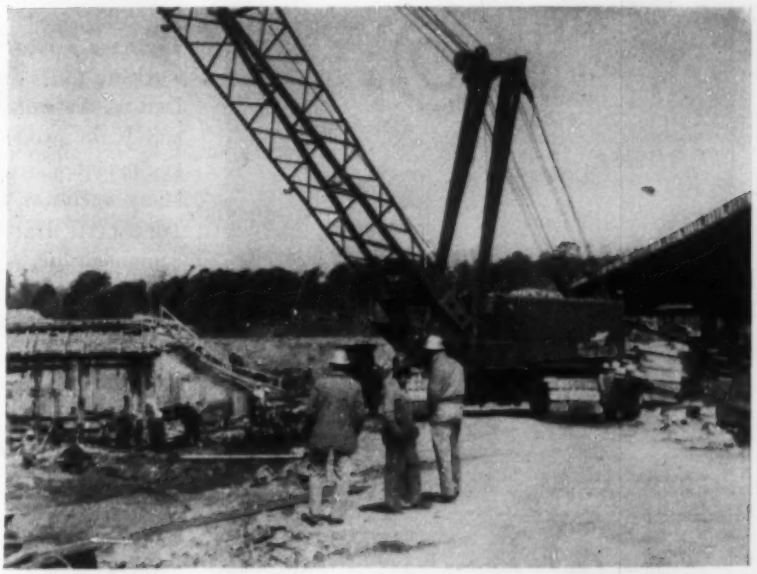
CONCRETE DAM will be long and low. Powerhouse units will be set well down in rock for maximum power head.

three shifts; the total work force will go up to 1,800 this summer as concreting really gets up speed. Although it has been relatively slow going, as is usual in getting a concrete dam off the rock, during the year since construction work started, 50,000 cu yd of concrete has been placed. In general, the granite foundation has been very good, but here and there a fault or mud seam has had to be cleaned out and grouted.

The foundation rock will have 30-ft drain holes leading up to 24-in. half-round conduits to carry off seepage. In addition there will be 1¾-in. diameter grout holes sunk 30 to 100 ft in a row upstream of the drain holes.

• **No river problems**—River flow averaging about 20,000 cfs and reaching as high as 45,000 cfs has presented no unusual diversion problem. The river, flowing generally eastward at this point, was turned north by earth cofferdams and kept over on the left side of the rapids while power plant and tailrace excavation was carried out near the right shore. Flow also had to be maintained in a 3,000-cfs canal feeding industrial and municipal water supplies and 7,150 kva of hydro units in the city of Roanoke Rapids. The canal will be closed when the new dam is completed.

Remaining river handling during construction will be accomplished by straightforward channel-shifting operations, using earth cofferdams and temporary sluices cast in the dam for the purpose (see drawing). When the dam is completed, there will be normally a 62-ft depth of water against its upstream face.



DAM BEGINS TO TAKE SHAPE behind earth cofferdam. Downstream trestle will carry carloads of concrete as operation speeds up this summer.

Present scheduling calls for the first of the four 27,800-kva units to go on the line next June, 1955. The fourth will be due to turn in December, 1955. Turbines will be adjustable blade propeller type, 128.6-rpm. The generators they drive will be enclosed, but the gantry crane will ride above, unsheltered, making this a semi-outdoor station.

D. N. McCord is project manager for Stone & Webster; I. R. Kline is resident engineer. E. F. Stepanek and C. W. Robertson are day and night construction superintendents and A. R. Stuckey is assistant to the project manager.

K. M. Quigley is general superintendent for Central Engineering and Construction Corp.

Link-Belt Model K-595 dragline working for Strasburg Clay & Coal Company near Baltic, Ohio. Rig has 3½-yard bucket, 80-foot boom.

"Doubles cable life—cuts operating costs"

THAT'S what Edward "Rusty" McGinness, owner of the Strasburg Clay & Coal Company, reports after 5000 hours' tough stripping with his TORQMATIC-equipped Link-Belt dragline.

And with the Allison TORQMATIC Converter automatically absorbing shock loads he's kept repairs to a minimum—only $24.00 in replacement parts on the drag, no repairs to the converter. The rig strips 100 tons of coal a day, uses 6 gallons of low-cost Diesel fuel an hour.

At first, Rusty was skeptical about having a TORQMATIC Converter. Now he calls it the "best unit ever made for a rig." And he should know—he's been in the coal business 15 years, has run every kind of mining equipment. Rusty reports the torque converter automatically protects cables, boom and engine from damage by absorbing sudden shocks.

There's a TORQMATIC Converter for a wide range of hard-working units from 40 to 400 horsepower. TORQMATIC DRIVES, the *matched* converter-transmission team, cut costs and boost production in trucks, scrapers, and other big equipment.

Many operators have converted their direct-drive units to TORQMATIC DRIVES to get better performance and longer equipment life. Ask your equipment manufacturer or dealer about Allison TORQMATIC DRIVES in your units. For engineering details and specifications, write direct.

Allison Division of General Motors
Box 894E, Indianapolis 6, Ind.

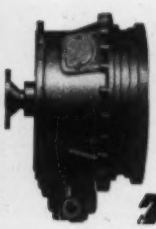
ALLISON TORQMATIC CONVERTER

Simple Design — one-piece cast converter elements — minimum maintenance

Compact, easy to install in existing equipment

Designed for power applications in the 40 to 400 hp range

Longer Equipment Life —absorbs shock, eliminates engine lugging, cuts maintenance costs



GM GENERAL MOTORS

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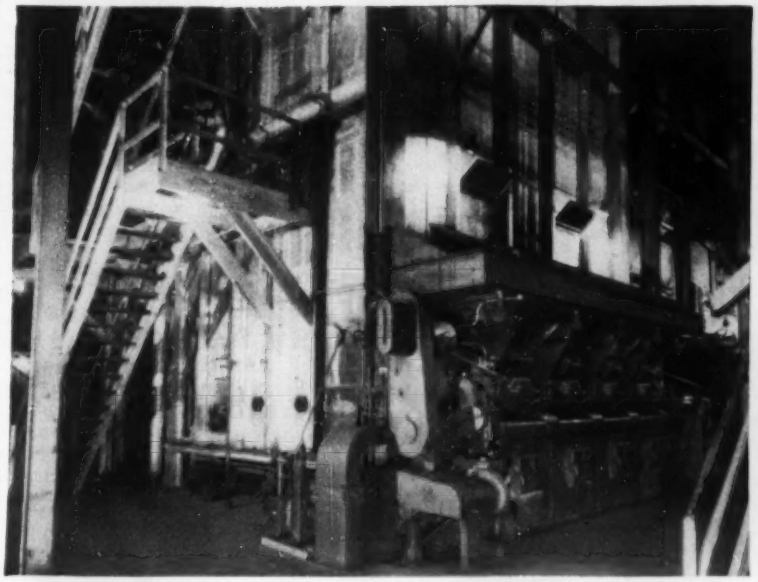
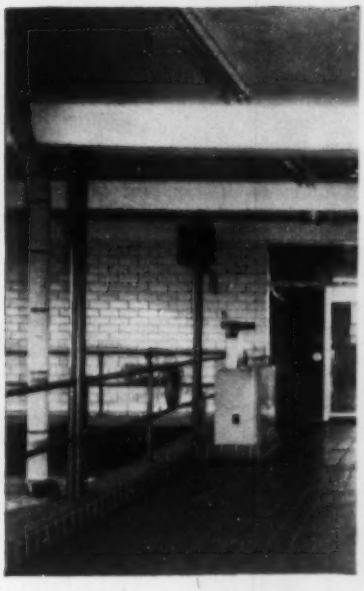
TORQMATIC DRIVES

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES • TRUCKS • TRACTORS • SCRAPERS • SHOVELS • DRILLING RIGS





Whose equipment to install? Here's a new approach to the . . .

Equipment selection quandary

Manufacturers, salesmen, contractors and owners may not all agree this is the best way, but it's a new approach

Arthur W. Consoer
and
Ralph A. Smith
Consoer, Townsend & Associates
Chicago, Ill.

Engineers and architects often are puzzled as to how they can best bring about the installation of particular items of equipment on a construction project in the most satisfactory and equitable manner.

Many considerations are involved in final decisions on specific types of equipment to be installed in a structure: Proper operating results after installation are naturally of the utmost importance. Both initial costs and operating costs are worth serious thought in working out selections. Space requirements of various competing types of equipment cannot be ignored. Records of performance of various brands on similar installations elsewhere need to be investigated and weighed in making choices among various competing items of mechanical equipment.

Many times the engineer or architect takes refuge from a barrage of selling efforts and conflicting claims for economy and excellence by writing a purely functional specification. When the specification writer does that he is only putting off the evil day when a final decision must be reached and a particular brand of equipment must be chosen for a particular installation. When specifications contain only a general description of the type of machinery needed, and some rather general standards of design for the equipment are outlined, the successful contractor, the owner, and the engineer or architect are tossed into a turmoil of negotiations regarding the particular brands of equipment finally to be selected and bought.

Some years ago under the aegis of the Federal Public Works Administration, engineers and architects were required to give in their specifications the names of at least three competing brands of equipment in each particular case, and the contractor was then privileged to purchase and install any one of the three or more kinds of equipment named. This type of bidding procedure for equipment items worked fairly well only in cases where it was not difficult to name three kinds of equipment of about equal value in performance and efficiency.

An equipment specification which is purely functional, or which names specifically three or more brands of machines or other equipment, is almost certain to result in an enormous expenditure of time on the part of equipment salesmen, engineers and architects, and the owners. Much bitter feeling frequently is engendered by that type of equipment specification. Recriminations, charges and counter-charges, fair and unfair criticism seem to become the order of the day with some or all concerned in selling, recommending, and purchasing equipment items.

• **New proposal form**—For major items of equipment to be furnished and installed on recent projects designed by our firm, a unique form of bidding is now being used. It is perhaps best described by the following excerpt from the proposal form of a current set of contract documents:

* * *

(1) The Total Base Bid stated above includes the furnishing and installation of all items of major equipment of the manufacture listed as sub items (a) in the following tabulation.

(2) The Owner may select items of any manufacture as listed in the following tabulation, and the undersigned agrees to furnish and install such items as selected, and for a contract price equal to the Total Base Bid stated above adjusted by the difference between the sum of the installed prices for all sub items (a) and the sum of the installed prices for the items selected by the Owner.

(3) The installed price stated in the following tabulation on all sub items includes the preparation and submission to the engineers by the undersigned of detailed drawings necessary to accommodate such equipment all as defined and described in Paragraph 4 "Alternate Equipment" in the Special Conditions of the Contract.

(4) The installed cost stated in the

(*Continued on page 36*)

following tabulation on all sub items includes a complete operating installation, including the furnishing and installation of any and all changes or additions in structures, piping, buildings, mechanical electrical work, accessories, controls, etc., necessary to accommodate the equipment.

(5) If awarded a contract, all items of major equipment selected from the following tabulation by the owner will be guaranteed by the undersigned and his surety to meet the performance requirements of the contract specifications, all as defined in Paragraph 37 "Guarantees" in the General Conditions of the Contract.

(6) It is expressly agreed that all items offered in the following tabulation fully comply with the contract specifications.

Major Equipment Items

Item No.	Description	Mfr.	Installed Price
0-1	.....	(a).....	$.....
		(b).....	$.....
		(c).....	$.....
		(d).....	$.....
		(e).....	$.....

* * *

In using the above phraseology in a proposal form, it is our ordinary practice to fill in the names of definite manufacturers under (a), (b), and (c), and leave (d) and (e) blank, to be filled in by each bidder if alternate equipment is offered by other manufacturers.

Our use of this form of bidding on equipment items in recent months, has worked out very satisfactorily in engineering practice on a wide variety of construction projects. This bidding procedure on equipment items has resulted in practically no fault finding on the part of manufacturers, equipment salesmen, and owners. It has worked out so successfully that it may be considered to be standard practice in specification writing for equipment, as far as we are concerned.

Naturally, great care must be exercised in listing specifically only such items of equipment as the engineers and the owners will be willing to accept, with preference naturally given to the particular items of equipment named in (a) in a schedule like the one quoted above.

• **Advantages**—The advantages of this unique form of equipment proposal may be listed as follows:

• All shopping for bids on equipment prices by the general contractor after the "letting" has been pretty well eliminated.

• The owner and the engineer obtain with a minimum of negotiation the particular types of equipment favored by them for installation.

• Competing manufacturers have an opportunity to have their particular brands of equipment mentioned in the contractor's proposal and further have an opportunity to sell their equipment to the owner and the engineer after the bids have been opened and declared.

• The owner is left as the sole final authority on the matter of making a decision regarding the particular brands of equipment to be installed in the project, regardless of whether the price for a brand is high, low or in-between high and low. The owner can give proper consideration on such items as pumps to efficiency and details of construction which affect maintenance, and possibly to conformity with similar equipment then in operation by the owner.

Electric eye never sleeps, constant vigil kept on water supply turbidity

A photoelectrically operated device continually observes turbidity in a water supply for Pendleton, Ore., automatically closing gates in the supply conduit when water gets muddy, opening them when it has cleared.

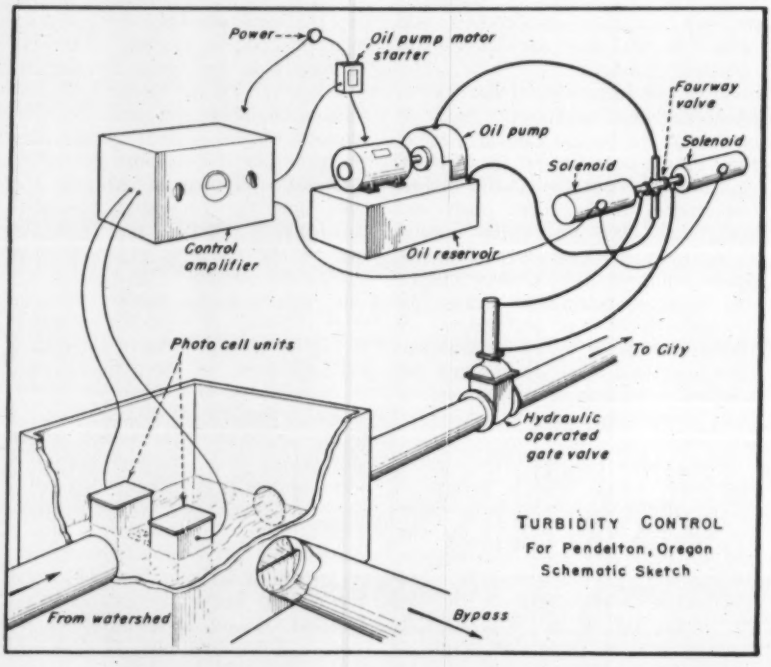
Pendleton's water supply consists of a gravity source 15 miles east of town and three deep wells within the city limits. At times, the gravity source becomes muddy, and in the past an intake operator was needed to divert the muddy water from the transmission line and the distribution system. It was found humanly impossible to do the precise surveillance and control job now being done by the electric eye and the controls it activates.

The photoelectric scanner is designed so that two light paths of different lengths pass through the water being inspected. Two photocells are connected to a bridge circuit so that only differences in the amount of light transmitted through the two paths are amplified and used to control gate operating mechanism. Variations in light source intensity, dirty lenses, and voltage fluctuations will not cause false operation, since they produce no unbalance in the bridge circuit. In case of complete light blackout to the photocells, the gates will close automatically.

When the gates at the intake close and water in the city's reservoir drops to a control level, an automatic installation turns on one or more of the city's deep well pumps.

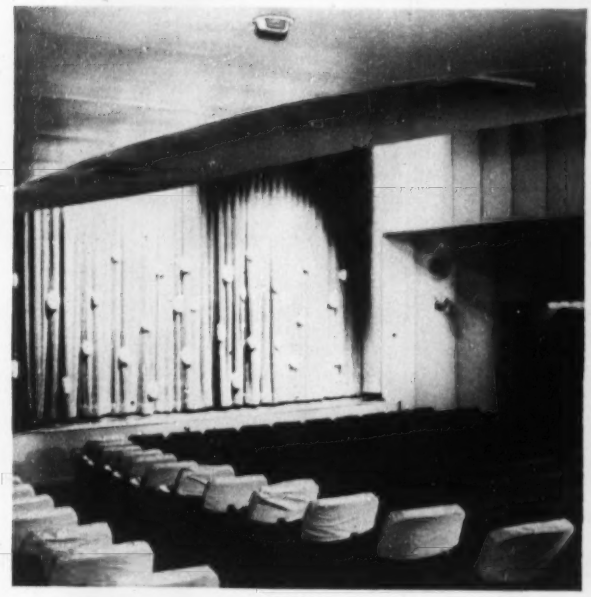
Meanwhile, the electric eyes continually observe turbidity of water being by-passed in the weir box at the surface water intake. The intake automatically reopens when turbidity is reduced to an acceptable value.

Water superintendent Ray Struthers suggested the electric eye idea. The Corvallis consulting firm of Cornell, Howland, Hayes & Merryfield engineered the installation. It has now operated successfully over several months.



TURBIDITY CONTROL
For Pendelton, Oregon
Schematic Sketch

The MOST DEPENDABLE, PERMANENT detector for fire alarm or release systems is DETECT-A-FIRE®



1. SHIP'S THEATER TAKES NO CHANCES on fire. The S. S. United States has DETECT-A-FIRE thermostats on the job in its beautifully designed theater, and all other public places. These thermostats are constantly on guard, permanently protecting this most modern liner and the lives of those sailing on her.

2. WHY RISK CHILDREN'S LIVES? The menace of school fires, like the one shown in the illustration above, need no longer exist. The protection of lives and valuable property should be of prime consideration in planning construction of all public buildings.

3. AUTOMATIC FIRE ALARM SYSTEMS are a permanent installation and must always be ready to function immediately and repeatedly as fires occur. Fenwal DETECT-A-FIRE units are worth the slight extra cost since they pay for themselves in two ways — Greater Safety — Permanent Dependability.

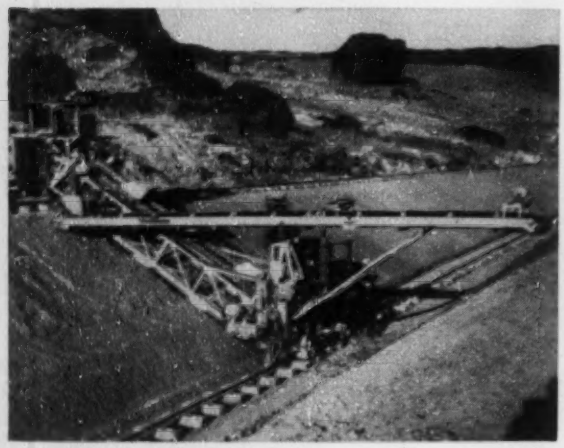
4. FREE BULLETINS (above) contain complete details on Fenwal DETECT-A-FIRE thermostats, the only unit bringing you the benefits of Rate-Compensation Actuation, a unique principle of fire detection. Fenwal engineers will gladly work with your system installer so that you will enjoy the advantages of *full* fire protection and *long term* economy. Write Fenwal Incorporated, 267 Pleasant Street, Ashland, Mass.

Fenwal

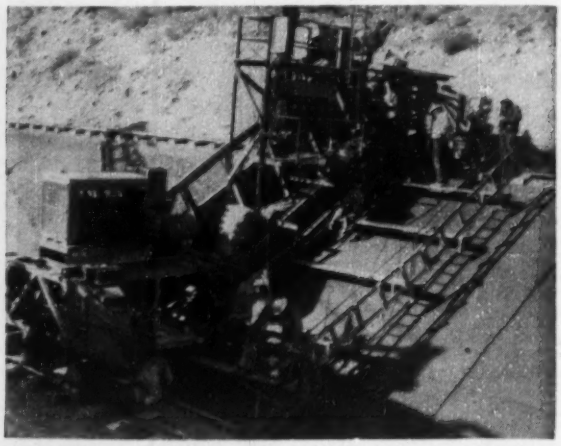
DETECT-A-FIRE®

Thermostats

DYNAMIC, RATE-COMPENSATION ACTUATED FIRE DETECTORS



MACHINE TRIMS CANAL BANK to finish grade working just one slope. Unit replaces equipment that spanned full canal width. New machine can handle slope lengths of 10 to 48 ft.



CANAL PAVING RIG also works one bank. New machines are easier to move and to adjust to new size. Diesel-powered generators operate both trimmer and liner.

Working one slope at a time

New single slope canal lining and trimming machines are being used for the first time on a southeastern Washington reclamation project. Developed by J. A. Terteling & Sons, Boise, Idaho, contracting firm, the machines are cheaper to operate, easier to move as well as to adjust to new sizes than previously used rigs that spanned the full ditch. The rigs have been used successfully on the 8-mile second section of the Chandler canal for the Kennewick division of the Bureau of Reclamation's Yakima project.

Both machines, powered by diesel electric drives operated through a gear reduction system, run along tracks placed along the center line and upper berm of the canal. They operate on only one slope of the canal at a time.

Terteling engineers point out that taking conventional lining and trimming equipment out of the ditch to by-pass a bridge or similar structure can cost a contractor as much as $20,000. According to their calculations, the new equipment can be moved for less than $2,000.

The trimmer consists of a single bucket line that scoops excess material from the slope and transfers it to the stacker belt. Mold boards behind the bucket chain complete the smoothing of the canal subgrade in preparation for lining.

In trimming the first side of the canal the stacker belt is arranged across the ditch to deposit excess material on the opposite slope. When the other slope is trimmed the belt is set up to take the excess material out of the canal.

A main generator unit operates electric motors which move the drive units on each track. A belt drive connects the motors to main gear reduction boxes, which are connected to secondary gear reduction units by splines with universal joints. There are two sets of wheels for each drive unit and each set is operated by a chain and sprocket drive from the second gear reduction box. Speed varies from nine inches to four feet per minute.

Accurate trimming is essential in canal lining operations to prevent overpour of concrete. Terteling's job at Chandler calls for a 4-in. neat line thickness and grade control is provided by wire guide lines on hubs offset from the center line and berm. Elevation control on both trimmer and liner is handled by hydraulically operated pins mounted above each set of drive wheels.

The lining machine is similar in principle to usual equipment. Concrete is dropped into a hopper and slides down a pan. It is retained uniformly along the pan by a system of baffles and the hopper itself can be moved up and down the pan. The screed and vibrators are similar to those on equipment now in use. Concrete finishers work from a platform attached to the rear of the machine and a hydraulically operated beam puts dummy joints in the concrete at specified intervals.

The contractor designed the equipment expressly for smaller reclamation jobs, where there are only short sections of canals or laterals and where there are numerous structures to by-pass in the ditch.

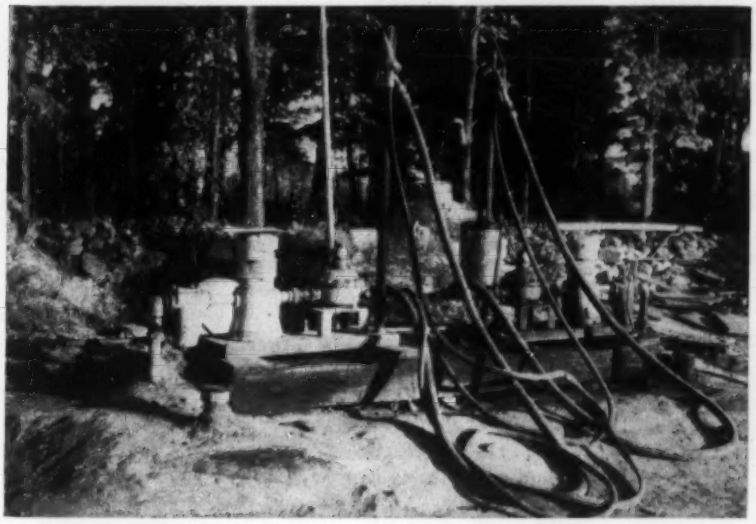
Experience at Chandler has shown that the machines can trim and line up to 1000 ft of slope per day. Either machine can be loaded completely on a 20-ton trailer.

In a recent operation the contractor was able to switch both machines across the canal in a single eight-hour shift. The machines were partially disassembled by removing the generators and part of the upper drive units. Each one was then lifted across the canal by a crane.

Pumps, water meters replace gas pumps

A. L. Dougherty Co. Indianapolis earthmoving contractors on the Poughkeepsie section of the New York Thruway saved quite a bit of money by replacing metered gasoline pumps over buried fuel tanks with self-priming electrical centrifugal pumps and ordinary water meters and filters. The new setup provides for the controlled delivery of gasoline and diesel fuel and has resulted in a saving of several hundred dollars.

Bill Reid, superintendent for the Dougherty Co. reports that the installation works fine. The only modification necessary was to change the



gaskets on the centrifugals to a type that would not be affected by the petroleum products.

The pump and meter system is reported to have the complete approval of underwriters and insurance companies in close connection with the transfer of flammable fluids.

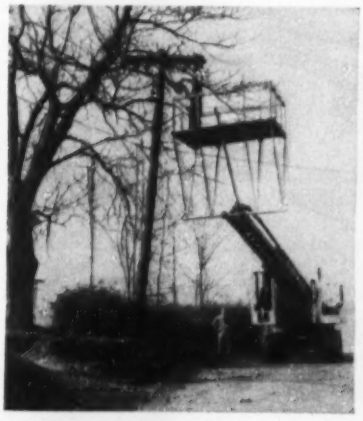
The two pumps used on the Poughkeepsie fueling point were Marlows—Model 10 EVP-5. Marlow Pumps, Box 566, Ridgewood, N. J.

Gradall is converted to mobile work elevator

Employees of the public works department of Parsippany-Troy Hills Township in northern New Jersey get a lift to high-level work with a platform attached to the end of a Gradall boom. The elevator is used to expedite municipal maintenance work such as trimming trees, replacing bulbs in street lights, working around utility lines, etc. The platform is fabricated from welded steel pipe and is kept level by the tool actuating cylinder on the machine. It can be raised to a height of more than 28 ft.

Tunnel cleaning labor cut 96% by fork truck

It used to take four men four days to clean the walls in the twin tubes of San Francisco's 1,662-ft Broadway tunnel. One man now does the same job in four hours, using a washing unit composed of a 250-gal water tank, hydraulically driven brushes and spraying jets, all mounted on a fork truck. Forward jets spray the wall with water, the brushes loosen the grease film, and after jets rinse away the dirt. The unit is owned and operated by System Lift Truck Service, 1711 15th St., Oakland, Calif.



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Contractor: Nicholas DiMenna & Sons

PUMP 20 MILLION GALS PER DAY TO KEEP SUBGRADE DRY

THE CENTER-LINE of this excavation was less than 300 ft from the Atlantic Ocean, which fairly flooded through the highly pervious sand.

• The problem was to lower 28 ft of groundwater in a 30-ft cut for a new concrete intercepting sewer—to do this on a site where contractors could recall previous experience of tough water-fighting at an excavation depth of only 16 ft, even with aid of wellpoints. Thus, the outlook was not exactly rose-colored.

• Yet the plan of the Griffin engineers and the efficiency of their pumps and wellpoints gave a sure, speedy solution. The truly enormous volume of 20 *million* gals per day was pumped under perfect control, keeping subgrade bone-dry and permitting economical open cut, except where sheeting was required (see photo) to protect existing sewers and structures.

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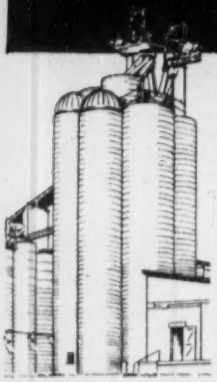

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NOVEL SOLUTION to drive-in operational problems on a narrow lot.

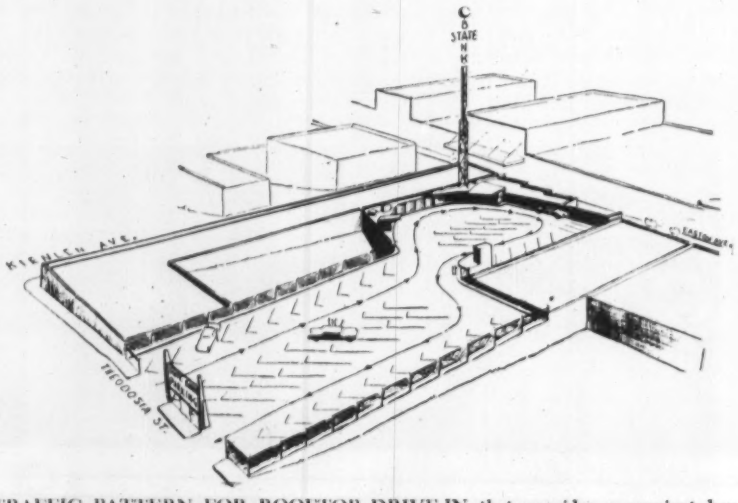
Driveway turntable, rooftop service overcome drive-in banking problems

Banks wishing to install drive-in teller windows for their customers need not be stymied in all cases by lack of sufficient driveway and parking space.

At least two solutions to this problem have been found. In Waterbury, Conn., an electronically controlled turntable is the answer to handling cars in a narrow driveway. A bank under construction in a St. Louis suburb offers another variation of the drive-in principle in the form of rooftop facilities.

• **Turntable drive-in**—The Citizens & Manufacturers National Bank of Waterbury, Conn., had room enough to install a drive-in window, but driveway space was limited to a side lot 35 ft wide and 100 ft long.

The space was too narrow for the turning radius of most modern cars, and serious delays in account handling were anticipated until Edwin H. Mosler, Jr., of the Mosler Safe Co. (installers of the drive-in window) suggested the bank provide a turntable at the rear end of the side lot.



TRAFFIC PATTERN FOR ROOFTOP DRIVE-IN that provides convenient handling of motorist-depositor accounts with little interference with parking.

The Macton Machinery Co., of Stamford, Conn., was hired to install a 25-ft-dia steel turntable, which is electronically controlled by three photo-electric cells.

The motorist drives on, waits a few seconds, and then drives off straight to the window. A green traffic light indicates to the driver that it is safe to approach the turntable, and the moving car trips the beam of a photo-electric cell thus turning the light to a yellow caution signal.

When the vehicle attains the proper position on the turntable, it trips a second beam that changes the signal to red. The turntable will not operate unless both light beams are interrupted, indicating that the car is in proper position and not moving.

Three seconds after the red stop light goes on, a timer automatically rotates the turntable 120 degrees in the proper direction. As the car leaves the turntable it trips a third cell that resets the control circuit for a new cycle.

According to Mosler, the turntable plan can be used on lots or alleys as narrow as 25 feet.

The Waterbury installation, is equipped to keep itself free of snow and ice. Coils of copper tubing laid in the driveway and turntable are filled with an anti-freeze solution that is circulated through a boiler.

• **Drive-on rooftop bank**—The State Bank & Trust Co., of Wellston, Mo., in metropolitan St. Louis, will provide an interesting variation of drive-in banking when its $600,000 bank building is completed this fall.

The building is designed to provide two roof stations that will insure regular traffic flow without interfering with rooftop parking. An automatic elevator will take care of the customers wishing to descend to banking floors, and a "snorkel" teller service will accommodate motorists.

The new building is suited topographically for rooftop service—its plot slopes up from the front of the building and the grade elevation at the rear of the site is a story higher than at the front. This permits extension of the orthodox rear parking lot over the one-story reinforced concrete structure.

In using the "snorkel" device, the teller at first floor level is in constant view of, and in communication with, the rooftop depositor by means of mirrors and a speaker system. A con-

(*Continued on page 42*)

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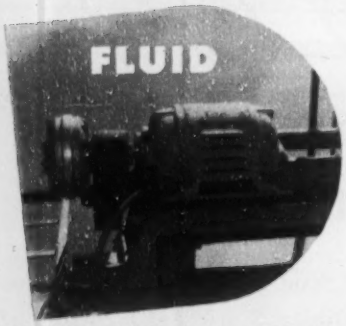

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TWIN DISC CLUTCH COMPANY, Racine, Wisconsin
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veyor facilitates deposit and transfer of money.

Floodlights will illuminate the parking area for night-time operation. About 250 tons of reinforcing steel will be used in the building, designed by Bernard Bloom, St. Louis architect. George L. Cousins Contracting Co., has the general contract.

• **Drive-in windows**—Installation of drive-in windows varies little from job to job. Teller cells usually are constructed of reinforced concrete. Windows are of bullet-proof glass. Exchange of money and documents is accomplished through the use of safety drawers. Conversation is carried on by means of an intercommunication device.

Cleveland drops Mall garage—blames rising building costs

After three years of discussion and study, the city of Cleveland, has decided to abandon plans for a 1,500-car garage planned for construction beneath the downtown Mall area (ENR Aug. 6, 1953, p. 51).

Rising building costs were reflected in the decision. As originally put forth, the project would have cost an estimated $3 million. Today's cost was set at $4.5 million.

Morrison-Knudsen, Inc., was to have built the structure and operated it under a 40-year lease from the city.

Previous Ohio Supreme Court rulings against such arrangements also weighed heavily in the decision to abandon the idea.

The city will seek relief from the downtown parking problem by other means, possibly in the form of lots in the city's fringe areas.

New parkway for Seattle?

The city of Seattle, Wash., will begin the acquisition of property valued at more than $6 million for a 5-mile parkway, if the city council accepts the recommendations of City Engineer W. E. Parker.

The parkway would be in an area recently annexed to the city, extending from Matthews Beach on Lake Washington to Carkeek Park on Puget Sound, about eight miles from city center. It not only would provide traffic relief, but it would provide the route for a drainage system since much of the proposed route crosses low terrain. Recreation facilities also would be provided in landscaped areas adjacent to the 150-ft-wide parkway.

Clear slum tract

Now Detroiters wonder who will build on it

Detroit's Common Council has 128 acres of redeveloped slum land ready for new low-rent housing construction, but no one can agree on who should do the building.

The $7-million Gratiot-Orleans Redevelopment Project started rolling in 1946 when city officials drafted a redevelopment schedule known as the "Detroit Plan." Under it, the city was to clear out Detroit's lower east side slum district in "super blocks"—condemning and redeveloping four or five blocks at a time.

Schools, parks, playgrounds and other public improvements were to be built by the city, streets were to be widened, new sewers and utility feed lines were to be installed. The remaining residential land was to be sold to private builders who would construct low-rental units according to plans approved by the city's planning commission.

• **Housing law spurred plan**—In 1949, Congress passed the slum clearance and urban redevelopment section of the national housing law, and the Detroit Plan had the impetus and financial help it needed to succeed.

Detroit began condemning and clearing the land in the 128-acre tract—at that time Detroit's worst slum area. It cost the city $6.9 million to buy the slum structures, demolish them, clear the land, install improvements and prepare the land for reconstruction. The federal government contributed $4.6 million, with city taxpayers holding a $2.3-million tab.

In May, 1953, the city put project land that remained after improvements—about 50 acres—on the auction block. Housing Corp. of America, a subsidiary of Warner Kanter, Inc., of Cincinnati, outbid a local coalition of real estate and mortgage brokers known informally as Bert L. Smokler Associates. Housing Corp. bid $1,266,000, Smokler bid $1,265,000.

Last month, however, Housing Corp. was obliged to give up its option on the property because of "irreconcilable conflicts." These conflicts, according to spokesmen of the Smokler group, were simply that the corporation "was unable to meet the requirements of its bid and make a profit."

• **Back to the old plan**—The comment of Detroit's Mayor Albert Cobo after

the Kanter withdrawal, was simply that the city could now go back to the "old plans" that called for development by several independent builders instead of one large building and financial combine. Under the plan, each builder would take a section of the redeveloped land and build on it in accordance with standards set by city planners.

Meanwhile, an idea for public development of the area has evolved. Housing Commissioner Walter J. Gessell has suggested creation of a non-profit, public corporation to develop the area and others that may be cleared later.

Such a corporation would have industry, labor and civil representation. Gessell's suggestion has the backing of the United Auto Workers Union (CIO), which has offered to contribute $10,000 from its funds to help get the organization under way.

The council will study Gessell's plan, submitted formally on July 7, but Mayor Cobo has suggested that because of tax considerations, it might be less expensive to let private corporations again bid on the project.

Anticipating this, the Smokler group has been drawing its plans and reviewing its financial arrangements in order to be prepared if the city should ask new bids.

Sale of 78,000 acre tract sparks plan for development

The biggest land transaction between private parties in the state's history was recently announced in Florida. The land sale, involving 78,000 acres—all in one tract—is believed to be the first step in a development project that eventually may grow to exceed $1 billion.

The tract, on Florida's lower west coast, was purchased from A. C. Frizzell of Murdock, Fla., by the Chemical Research Corporation of Canada and Miami.

In a joint announcement, J. H. Buchanan, president of Chemical, and J. Bradley Streit, chairman of the board, said:

"We plan to develop the entire 78,000 acres into farms, groves, ranches, townships, industrial, business, tourist and residential areas.

"The natural boundaries of our new property along Peace River, Myakka River and Charlotte Harbor give us more than 25 miles of water frontage and a direct seaway via Charlotte Harbor into the Gulf of Mexico.

"Highway 41, the famed Tamiami Trail, traverses the tract from the southeast boundary to the northwest

(Continued on page 46)

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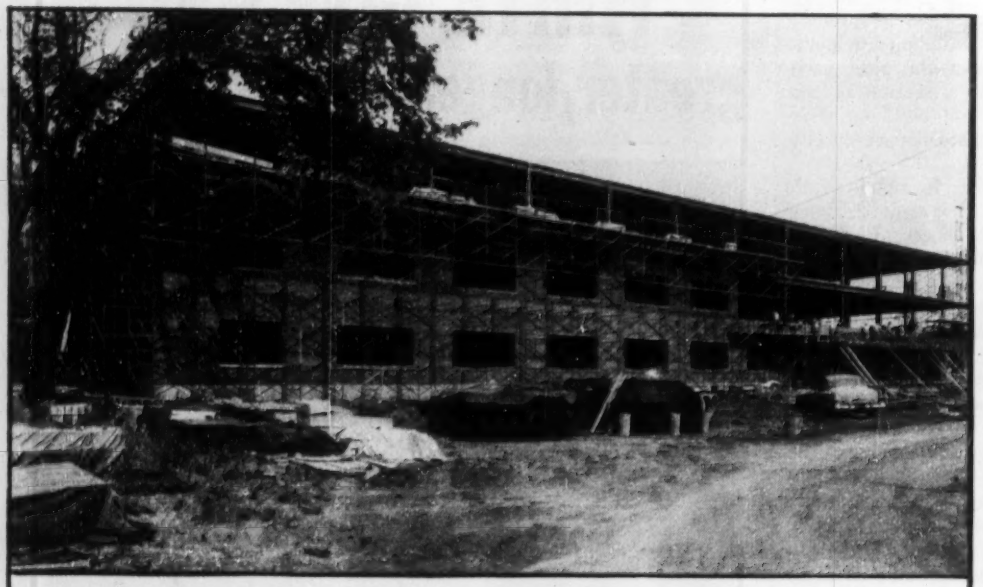

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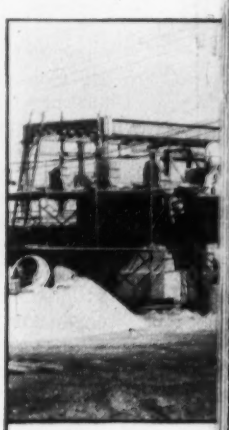

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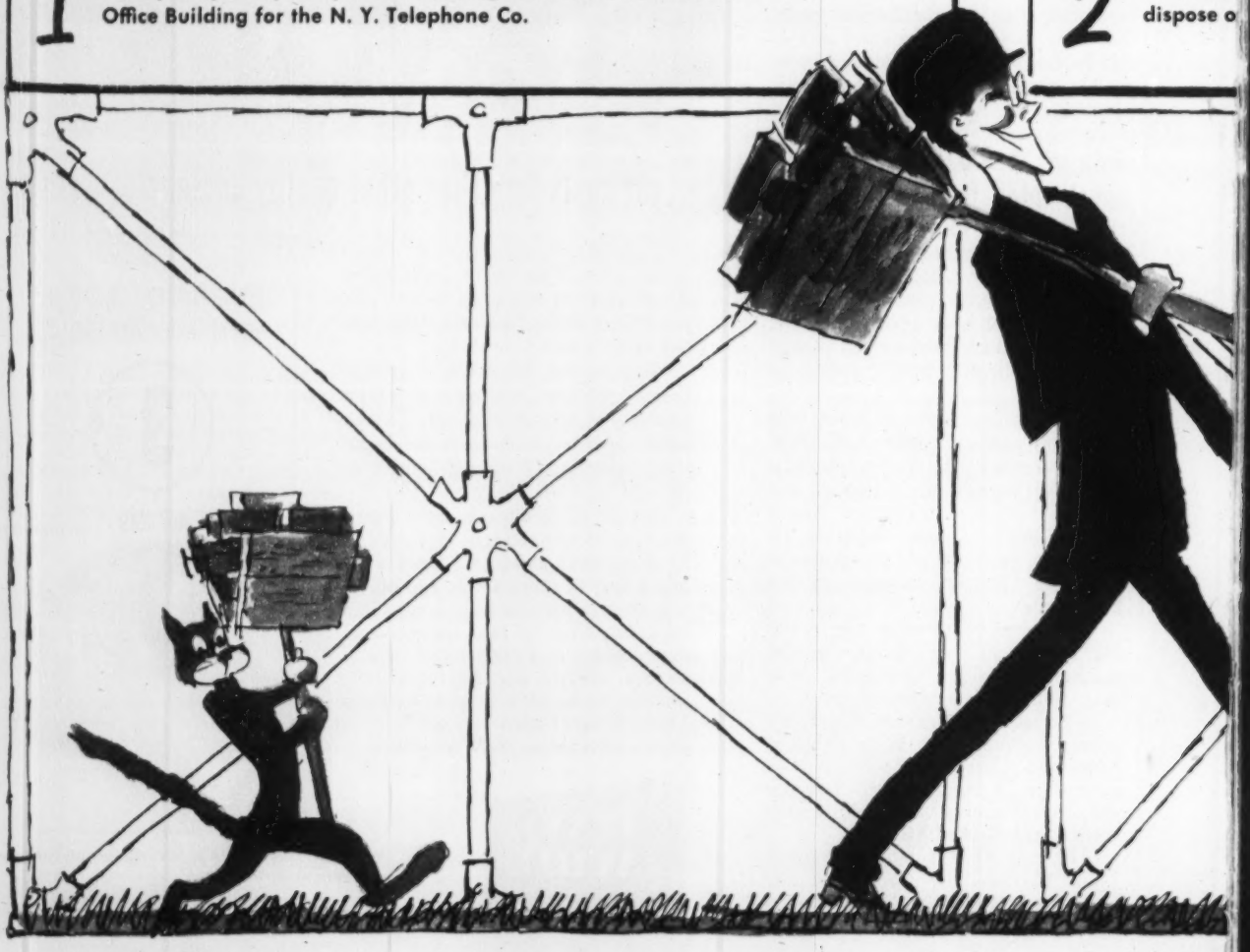

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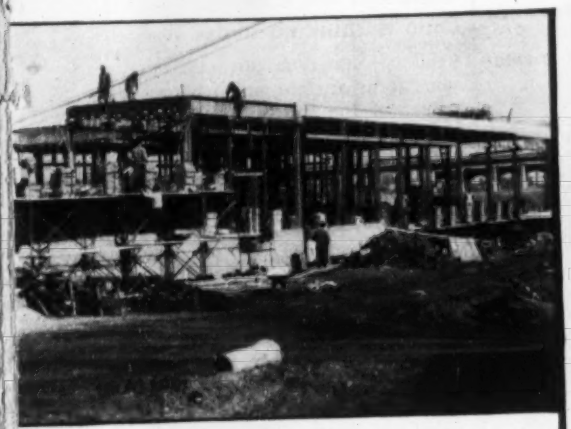
By Mr. Friendly



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f any workers, if Thompson can help it!

3 The Thompson Construction Corp. of Albany, N. Y. and Camden, N. J. tackles big jobs safely. Here it's shown at work on the Barker Bldg. for the West Va. Pulp & Paper Co. at Mechanicville, N. Y.

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line, giving us more than 28 miles of frontage on this heavily traveled highway.

"The property also has 14 miles of railroad frontage along the tracks of the Seaboard Air Line Railroad."

The tract, 30 miles south of Sarasota and 25 miles north of Ft. Myers, will be within 75 miles of St. Petersburg and 100 miles from Tampa when the $22-million, 15-mi. Sunshine Skyway across lower Tampa Bay is completed.

• **Second land purchase for Chemical**—The research company recently bought a 1,100-acre tract on the east coast of Florida for development, with homes and a shopping center that will represent an investment of about $32 million when completed.

Chemical Research became interested in the southern state in 1950, when Streit and his associates bought control of Maule Industries of Miami, the state's largest concrete products manufacturing firm.

Since then, Maule has purchased the Miami Crushed Stone Co., Peninsular Concrete Co., Materials Sales Corp., Tropical Farms and the Alfred Destin Block Co., transactions that have made Maule the number one concrete products firm in southeast Florida.

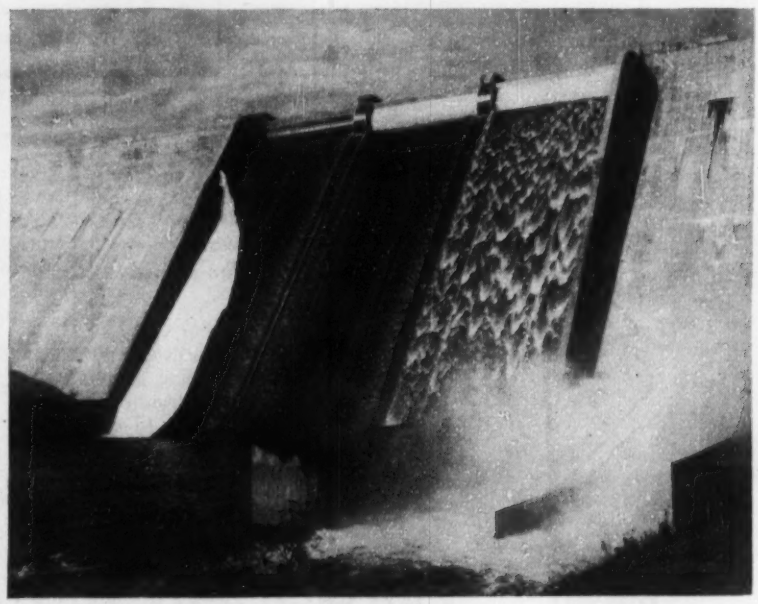
Last year Maule also acquired 3,135 acres of quarry land in Dade and Broward counties, giving it rock reserves in excess of 100 million cu yd—enough for 30 to 40 years of operation.

State aid for sewerage? Ohio is thinking about it

Ohio legislators are considering some form of state aid to permit the poorer of the state's 767 villages to comply with the Ohio Water Pollution Control Act.

The 1951 act gives the Water Pollution Control Board power to develop and enforce a program to abate stream pollution. Effectiveness of the law hinges on the board's issuance of limited term permits that allow municipalities and industry to discharge waste into streams as long as steps are being taken to render effluents harmless.

The financial problem faced by smaller communities that must build sewage treatment plants and, in some cases, sewer mains, is growing more acute. In most cases, these projects are financed by the sale of bonds sub-



Test drum gates at Friant Dam

Friant Dam on the San Joaquin River in California, held a record-breaking 517,347 acre ft of water when the river reached its maximum flow this year. The Millerton Lake reservoir behind the dam has a capacity of 520,000 acre ft. Here, water flows over the top with drum gates raised nearly to maximum elevation. Edwin F. Sullivan, operations supervisor for the Fresno office of the Reclamation Bureau which operates the dam, said the overtopping was decided upon as an operational test. He noted it could have been averted by opening dam's lower gates.

ject to statutes that limit a city's bonded indebtedness.

It has been pointed out that sometimes bond issues for construction of these facilities would approximate one-third to one-half of the property valuation of the community, thus driving industry and property holders from the village.

In other cases, the tax rate already is so high that bond houses said they could not gamble on the ability of the community to retire the bonds.

Statutes also ban fraternal benefit societies from investing in municipal bonds of villages, thus reducing the bond market still further. For these and other reasons, voters have defeated bond issues in elections held to finance sewage projects.

Of the state's 767 villages (under 5,000 population), more than half are exempt because they do not have public water systems or cause little or no pollution to streams. Of the remainder, 108 have adequate treatment plants; eight have plant improvements under way; 12 have plans completed; nine have hired engineers to prepare plans and three with inadequate plants are just marking time.

Of 224 villages having no sewage treatment, 97 have plans completed, 33 have hired engineers, five have projects under construction and 89 have taken no action.

Municipal briefs . . .

• **Denver's still a-building**—Another housing development for the North Denver, Colo., area has been approved. The 160-acre, 576-unit project promoted by J. G. Head of Los Angeles, Calif., has been approved and will occupy an area close to the 4,000 home F&S Development under construction.

• **Business must be good**—Facilities for 14 additional stores will be provided by $1.5 million in construction at Milwaukee's (Wis.) Southgate shopping center. The alteration will include a 50 x 150 ft unit and basement with accommodations for ten stores, and space for four additional stores to be added to a projected supermarket at the center.

• **Don't stop—yield**—"Yield Right of Way" signs are working out well in their state, according to engineers of the Virginia Department of Highways. Substitution of "yield" signs for "stop" markers was authorized by the 1954 General Assembly, and to date about 50 have been placed on state and city intersections.

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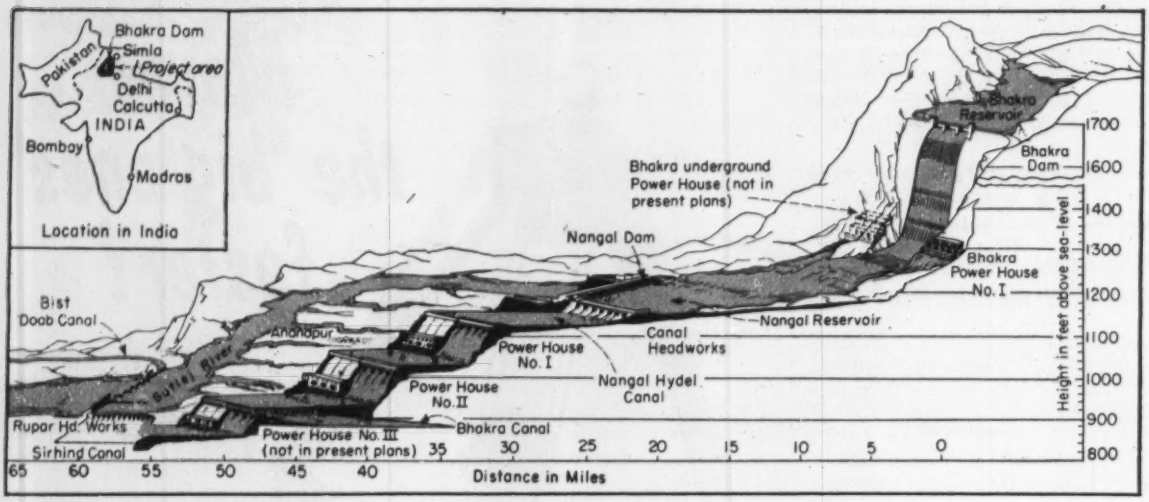


India's Nangal Dam goes to work

When, on July 8, Prime Minister Nehru appeared before an audience of 200,000 to open the gates in the headworks of the Nangal power and irrigation canal he was able to furnish the Indian people a preview of the dividends that will flow to them from their greatest multi-purpose project, centering on Bhakra Dam on the Sutlej River in the Punjab Province (ENR Mar. 27, 1952, p. 79).

Ultimately these dividends may total 3.6 million acres of newly irrigated land plus a hydrogenerating capacity of 400,000 kw. For the present, since not much more than run-of-river floodwaters can be used, the irrigated acreage will total about 400,000 and the power about 50,000 kw.

As shown above, the central unit in the scheme—for storage and the bulk of power—is Bhakra Dam, whose dedication is still four or five years away. Providing utilizable storage of over 5 million acre-ft, the dam will have nearly twice the concrete volume of Hoover Dam and lack only 46 ft of its record height.

Nangal Dam 8 miles downstream, which Mr. Nahru dedicated, is a gated diversion structure (1,029 ft long and 95 ft high) that turns water into a 40-mile irrigation feeder canal whose 12,500 cfs flow will also pass through two completed power plants. Much of the power from these plants (initially one 24,000-kw generator each) will be used in the construction of Bhakra Dam, for which M. Harvey Slocum is project manager assisted by about 50 other Americans.

The 40 mile Nangal Hydel (for hydroelectric) Canal represents a major piece of construction work requiring 24 million cu yd of excavation and involving fills up to 80 ft and cuts of as much as 100 ft. Also, either in siphons or on aqueducts, it crosses 94 mountain streams. It is concrete lined throughout.

At the foot of this main canal the irrigation system begins. Principal unit is the 12,500 cfs Bhakra Canal extending for 108 miles, but water will also be fed into the existing Sirhind Canal and, by means of the existing Rupar headworks on the Sutlej, into the new Bist Doab Canal on the opposite bank of the river.

In all, it is said that the main canals of the Bhakra project will total 538 miles, with smaller distribution canals adding another 2,400 miles. How much of this system is actually ready to receive water was not made clear by Mr. Nahru. He did point out, however, that Pakistan's claims to some of the Sutlej water could not be entertained. When the Bhakra-Nangal project was started in 1946, India and Pakistan were one nation, but very little was accomplished until after the separation in 1948 when India took over sole responsibility. Experts of the World Bank have been attempting for two years or more to effect a settlement of Pakistan's claims to the waters of the Sutlej which is one of the five principal tributaries of the Indus River which lies wholly within Pakistan. That the dispute is still very much alive was evidenced by the fact that the Pakistani Cabinet was called into emergency session to protest diversion of Sutlej waters to the Nangal Canal.

Mexico to open 1,080-mi highway

This month Mexico will formally open its new 1,080-mi Pacific coast highway—the road that has taken 20 years and some $50 million to complete.

The entire stretch from Guadalajara in west central Mexico to Nogales on the Arizona border—a route running more or less parallel to the coast—is completely paved except for a 26-mi prepared gravel road bed that is now being surfaced.

The road, the longest single stretch of highway in Mexico, required 18 major bridges and 106 minor ones over the wide mouths of the tropical rivers.

Even though the river beds are apt to be practically dry six months of the year, huge torrents of water pouring down these rivers in rainy seasons require unusually wide, stable bridges. The majority are concrete piers bearing steel truss structures fabricated in the U.S. All but three of the bridges have been built. But foundation piers have been finished for the missing links and it is hoped that they can be completed sometime this year. Meanwhile, provisional bridges are being used at the three spots.

The road starts at Guadalajara, where it connects with the main 425-mi route to Mexico City. North from Guadalajara the highway goes through rolling tropical hill country to the city of Tepic.

From there the road parallels the Pacific to Matzatlan, an important west coast port that will become a major stopover point on the new highway.

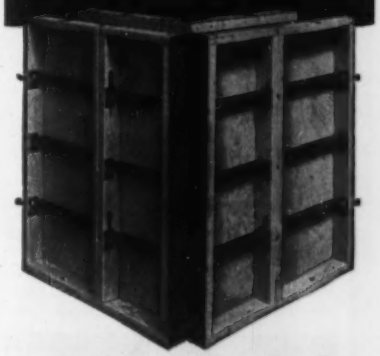
North from Matzatlan the highway continues along the Pacific to the city of Culiacan. From there it enters a new wheat-growing area served by a number of new dams and irrigation projects. The road again touches the Pacific at the fishing port of Guaymas in the northern state of Sonora, then turns north to Hermosillo and winds up at Nogales on the Arizona-Mexico border. There it connects with the highway to Tucson.

While a good part of the northwest area through which the highway passes is still desert, over 2,500,000 acres are being reclaimed. The three major river systems of the region being used for irrigation projects are: the Rio del Fuerte near the city of Los Mochis, the Rio Mayo near the city of Navajoa, and the Yaqui River.

Record stack going up in Canada

To soar 615 ft above a base 22 ft high, one of the highest smokestacks in the world is being erected in Copper Cliff, Ontario. The reinforced concrete structure is designed to insure proper diffusion, in the upper atmospheres, of waste gases from the iron ore plant of the International Nickel Co. of Canada, Ltd. Outside diameter at the base will be 63 ft 3 in. and inside diameter at the top will be 30 ft. Concrete is poured in slip forms which are raised by chain blocks after every 7 ft lift. Construction will be completed about the end of the year.

SYMONS



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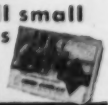

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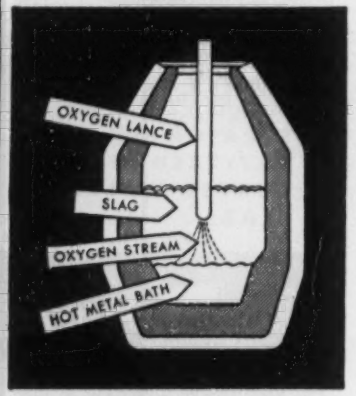

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The largest construction contract in Australia's history has been awarded to the Kaiser-Walsh-Perini-Raymond group of American contractors. With Kaiser Engineers as the project's sponsor, the group will construct a dam and mammoth 14-mile water tunnel through the Snowy Mountains of Southeast Australia.

Asme Handbook Metals Properties. This is Volume I of a four volume handbook sponsored by The Metals Engineering Handbook Board of the American Society of Mechanical Engineers. Published by McGraw-Hill, METAL PROPERTIES tabulates strength, hardness and the other properties of over 500 metals.

Whatever your immediate research, design or engineering problems, however unusual they may be, an early consultation with Kaiser Engineers is an important step toward their quick, profitable solution. Call or write Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

MEN AND JOBS

Norman B. Obbard heads American Bridge Division

Norman B. Obbard, former vice-president and general contracting manager of U. S. Steel's American Bridge Division since 1946, has succeeded Frank K. McDanel as president. McDanel, ending a half century career of building some of the world's largest bridges and skyscrapers, retired at the end of June.

Obbard—born in Cheltenham, England, and a U. S. citizen since 1942—was graduated from Cambridge University. He later attended Barcelona Technical College in Spain and Carnegie Institute of Technology. He began work with Truscon Steel Co., Youngstown, Ohio, as a draftsman in 1924 and two years later joined American Bridge as an engineer in the tower department. He became assistant to the vice-president in sales in 1940, a position he left temporarily during World War II in order to manage the shipyard division of the Ambridge, Pa., plant.

His work in the sales activities of the division resulted in such contracts as construction of the United Nations headquarters, the Prudential Building in Chicago, the Delaware Memorial Bridge and New York Thruway bridges.

Obbard has been granted a number of patents during his career with American Bridge, including one for the Obbard rotated-type transmission tower, now in use in many high voltage lines in the U. S. and abroad. In addition, he played an important part in the development of steel road guard posts, steel swimming pools, electric arc melting furnaces and mine roof bolts.

Ex-president McDanel, who rose through the ranks from laborer, was 15 when he started to work for American Bridge as timekeeper.

Men and Jobs briefs . . .

• **Careers**—**D. J. Bliefuss,** formerly chief engineer for International Engineering Co., is now consultant on hydraulic structures for Sverdrup & Parcel, St. Louis . . . **James Michalos** is new chairman of the Department of Civil Engineering, New York University.

George C. Wallace, recently head of Honolulu's division of sewers, has joined Metcalfe & Eddy as a consultant; he's succeeded for the city by **F. Y. K. Sunn** . . . **Murray G. Walker** becomes Washington State Supervisor of Water Resources . . . **Harold D. Hauf,** now on the staff of the American Institute of Architects, will become head of the Department of Architecture at Rensselaer Poly . . .

Col. Beverly Snow, who retired in 1952 as Upper Mississippi Valley division engineer, has been named chief engineer, Division of Water Resources, North Carolina State Department of Conservation and Development . . . **Berrien W. Davis** is new chief maintenance engineer for the North Carolina highway commission.

Clinton G. Cote is new city engineer for Walla Walla, Wash., succeeding **G. C. Cookerly** who resigned after 24 years of service . . . **Edwin R. Cotton** now devotes full time to his consulting engineer firm of Cotton, Pierce & Streander Inc., after resigning as director of the Interstate Commission on the Potomac River Basin . . . **Virgil E. Gunlock,** Chicago's public works commissioner, has succeeded **Ralph Budd** as chairman of the Chicago Transit Authority; **G. L. DeMent,** Gunlock's administrative assistant, succeeds as commissioner . . . **S. L. Van Norden,** who directed civil defense for Pinellas County (St. Petersburg, Fla.) for three years, is now superintendent of maintenance for county schools.

• **Retirements**—**Adelbert J. Newman,** inventor of the floating barge method of underwater drilling, after 18 years on the civilian staff of the Corps of Engineers . . . **Clarence C. Ruchhoft,** sanitary engineering director, Taft Sanitary Engineering Center, after 33 years with USPHS . . . **Col. Reginald Whitaker,** Baltimore district engineer since 1951, after Army service dating from 1918.

• **Business**—**John O. Bickel, R. F. Ziegenfelder** and **W. H. Bruce, Jr.,** become partners in Parsons, Brinckerhoff, Hall & Macdonald, New York consulting firm . . . **M. H. Greaser** elected president of American Dredging Co., Philadelphia . . . **Robert Rosenwasser** opens New York office as a building design specialist consultant . . . **A. R. Eckburg** becomes president of Ridge Construction Corp., building subsidiary of Eastman Kodak.

• **Associations**—**F. C. Kane,** former chief of the administrative division, Veterans Administration Delaware regional office, is manager of Allied Construction Industries of Delaware . . . **Walter W. Harper** becomes assistant director of foundations at North Carolina State College.

OBITUARIES

Herbert L. Whittemore, whose Whittemore strain gage contributed so much to structural testing and design over the past quarter century, died July 12 in Washington, D. C., at the age of 77. It was the strain gage and the Whittemore-Petrenko proving ring, used to calibrate testing machines, which made his name famous, yet these inventions were more or less routine achievements among the many to which he was a party during his long service, from 1917 to 1946, as chief of the engineering mechanics section of the National Bureau of Standards. Whittemore, a mechanical engineering graduate of the University of Wisconsin, taught at the University of Illinois and Columbia University before entering government service.

Carl B. Britnell, 42, civil engineer who aided in harbor installation at Halifax, died in Toronto, Ont., June 29. A graduate of the University of Toronto, he was associated with the Russell Construction Co., the Swansea Construction Co., and the McNamara Construction Co.

R. C. Perkins, 69, Arizona state highway engineer since 1951 and a 28-year veteran of the state roads system, died July 4 in Phoenix. Although his permanent connection with the road department began in 1926, prior to World War I he served as chief engineer of Maricopa County's first paved road system. During his career he built Gillespie Dam on the Gila River and Navajo Bridge over the Colorado.

Leslie H. Garlinghouse, 66, co-founder and partner of Garlinghouse Bros. and Gar-Bro Manufacturing Co., Los Angeles manufacturers and distributors of construction equipment, died June 26 in Pasadena. A 1910 graduate engineer of Rensselaer Polytechnic Institute, he served as designing engineer for Blaw-Knox Co. and American Bridge Co., Pittsburgh, before going to California in 1923.

Frank L. Grant, 74, general contractor of West Chester, Pa., died June 21. He was responsible for building roads, bridges and streets in North Carolina, New Jersey, West Virginia and Pennsylvania.

John V. Mongold, 57, Merrill, Wis., city engineer, died June 29. He was a mining engineer in the western United States and South and Central America before taking the city job in 1949.

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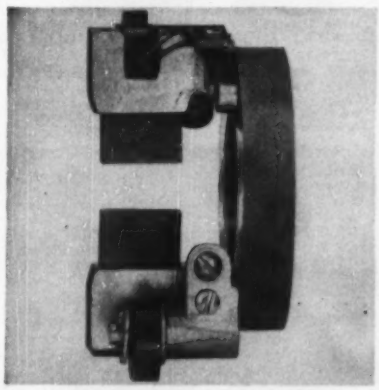

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Me., Brunswick**—AIRCRAFT PARKING AREA—BA 7/29—First Naval Dist., 495 Summer St., Boston, Mass., aircraft parking area, approx. 152,000 sq. yd. paved 10 in. concrete on 9 in. sub-base, drainage sys., etc., Naval Air Station, NOY 79818, Spec. 38330. $1,000,000-$2,000,000. Plans deposit $15. CD 10/30/51.

BIDS ASKED—BUILDINGS

▲ **Conn., Hartford**—LIBRARY—BA 8/3—City, C. F. Sharpe, mgr., 550 Main St., brick, marble, steel public library, Main St., Sheldon, Arch and Prospect Sts. $2,700,000. Plans deposit $100. Extended date. Schultz & Goodwin, 12 Hayes St., archts. Daniel J. Tasiile, 57 Farmington Ave., superv. archt. CD 6/14.

SOON LETS CONTRACT—BUILDINGS

▲ **Me., Portland**—MEDICAL CENTER—Trustees Maine Eye & Ear Infirmary, Maine General Hospital, Childrens' Hospital, 79 Bramhall St., soon lets contract 6 story medical center, Arsenal St. $4,000,000. Voorhees, Walker, Foley & Smith, 101 Park Ave., New York, N. Y., archts. CD 1/22/52.

▲ **Mass., Somerville**—OFFICE—First National Stores, Inc., 5 Middlesex Ave., soon lets contract office addn., alterations, 30,000 sq. ft. alterations, 64,000 sq. ft. new wing, Middlesex Ave., $1,000,000. Ganteaume & McMallen, 99 Chauncy St., Boston, engrs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW HAMPSHIRE**—State Dpt. P. Wks. & Hys., Concord,

Peter Salvucci & Sons, Inc., 55 Pond St., Waltham, Mass., CA $1,025,660, 4 mi. road mix hy., 54 ft. single span steel beam bridge and two spans of 100 ft. each welded plate girder bridge, Nashua. Bids July 1. CD 7/8, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

PENNSYLVANIA — BA 7/28 — Pennsylvania Turnpike Comn., Harrisburg,

Carbon Co.—constr. structures, grading, drainage, paving 4/11 mi. of Turnpike Sect. 37-B, part of Northeastern Exten. of Pennsylvania Turnpike, L.R. 13018. Plans deposit $20. C. H. Buckius, c/o owner, ch. engr. CD 10/28.

▲ **New York**—BA 8/6—The Power Authority of the State of New York, 270 Broadway, New York, Zone 7, constr. Cofferdams A and B, unwatering Cofferdam area, constr. bridge and incidental work for Long Sault Dam, near Massena, St. Lawrence Co. Plans deposit $50. Sanderson & Porter and Uhl, Hall & Rich, 52 Broadway, New York, 4, N. Y., and 230 Congress St., Boston 10, Mass., engrs. CD 11/10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—State Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,

Lipsett, Inc., 210 S. 40 St., Phila., Pa., LB $4,395,584. constr. 8-span plate girder and I-beam bridge, L.R. 67057 (3) 67045 (7), Philadelphia, Philadelphia Co. Bids July 9. CD 6/22.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

New Enterprise Stone & Lime Co., Inc., New Enterprise, Pa., LB $685,111, c.-conc. 3.27 mi. on each side of concrete divisor and four rein.-con. bridges over Blair Gap Run, Branch of Blair Gap Run, Gillens Run and Spencer Run, from Duncansville north, T.R. 36 and U.S. 220, Allegheny and Blair Twps., Duncansville Boro, Blair Co.;

James D. Morrissey, Inc., 9119 Frankford Ave., Phila. 12, Pa., LB $221,791, bit. on crushed aggregate surf. 2.07 mi., one rein.-con. bridge, Leg. Rt. 09013, Bristol Twp., Bucks Co.;

Kauffman Bros., Green St., Langherne, Bucks Co., Pa. LB $129,806, bit. on crushed aggregate surf. 1.07 mi. Leg. Rt. 09157, between Oxford Valley Rd. and Newportville Rd., Falls and Bristol Twps., Bucks Co.;

Jack and Jim Maser, Inc., Box 116, Brownstown, Pa., LB $354,983, bit. on crushed aggregate surf. 7.45 mi., one rein.-con. bridge over Bowmans Run; one I-beam bridge over tributary to Conestoga Creek; extend rein.-con. bridge over Trout Run, from east of Ephrata to west of Fetterville, U.S. 322, Ephrata, West Earl, Earl and East Earl Twps., Lancaster Co.;

Lee B. Marks, R.D. 3, Lebanon, Pa., LB $385,057, bit. on crushed aggregate surf. 2.58 mi., one rein.-con. structure and one 1-beam bridge over Little Conestoga Creek from Manheim Boro-south, T.R. 72 Penn and Rapho Twps., Lancaster Co.;

Central Pennsylvania Quarry, Stripping & Constr. Co., P.O. Box 378, Hazleton, Pa., LB $5,883,748, constr. 2.72 mi. divided hy. with crushed aggregate base and bit. surf., one I-beam overhead for interchange and four plate girder bridges, one over Susquehanna River, two over D. L. & W. R.R. and one over Ramp G of interchange, southeast of Plymouth, U.S. 11 in Hanover and Plymouth Twps., Luzerne Co.;

Union Paving Co., 1227 N. Broad St., Phila. 22, Pa. LB $80,982, bit. surf. 1.04 mi. existing pavement, 50 ft. wide, Leg. Rt. 67025, Delaware Ave. in City of Phila., Philadelphia Co. Bids July 9. CD 6/23.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

C. H. Lawson, Inc., Williamsburg, Va. LB $799,898. grading, drainage, surf. 1.74 mi. Annapolis-Washington Expressway completion of Crain Hy. interchange, relocation of Collington Rd. and 4 span steel I-beam bridge, Contr. P 631-13-320, Prince George Co. Bids July 6. CD 6/23.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Williams Constr. Co., Inc., Box 145, Baltimore, Md. CA $1,516,866. grading, drainage, surf. 1.763 mi. Baltimore Co. Beltway incl. cloverleaf, one 4 span steel I-beam bridge, Contr. B 635-4-415, Baltimore Co. CD 7/7, under LB:

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore,

F. P. Asher Jr. & Sons, Inc., 2715 West Ext., Annapolis, Md. CA $2,100,333. (slag) grading, drainage, surf. 14.75 mi. new road, North-South Rds., Contrs. Q-168-26-220 and Q-168-36-220, Queen Anne Co. CD 6/15, under LB.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Farnsworth & Chambers Co., Inc.**, 3018 Leeland St., Houston, Tex., CA, $2,637,554, overall testing facility for guided missiles, incl. components test laboratory, cold calibration test stand, ready storage area, engineering bldg., horizontal thrust chamber test stand, Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids June 22. CD 6/29, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a suuplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **W. T. Gregory Constr. Co.**, 125 Colley Ave., Norfolk, Va., CA, $1,331,248, Northside Junior HIGH SCHOOL, NORFOLK, VA. City School Bd., 402 E. Charlotte St., Norfolk, Va. Bids June 24. CD 6/29, under LB.

▲† **Forcum-James Co.**, 1489 Thomas St., Memphis, Tenn. CA, $1,467,303, constr. SHOP BLDG., two LABORATORY BLDGS. and two connecting corridors, install interior and exterior utility sys., cons.. bit. roads and parking areas, concrete walks and curbs, Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. CD 6/30, under LB.

▲ **Algernon Blair**, First National Bank Bldg., Montgomery, Ala. CA est. $2,000,000. 650 APARTMENT UNITS, Goldsmith Lane and Bardstown Rd., LOUISVILLE, KY. Village Green Apartment Co., Joshua Adams, pres., 512 W. Omsby Ave., Louisville, Ky. E. W Augustus, St. Matthews, Ky., archt. CD 9/22/52, under Martin L. Adams & Sons, as owners.

▲ **Holt Constr. Co.**, 1119 Laurel St., Nashville, Tenn., CA, $1,350,000. 188,000 sq. ft. brick, steel, concrete, lumber, Green Hills SHOPPING CENTER, department stores, drug stores, etc., NASHVILLE, TENN. W. C. Weager, Jr. & W. H. Criswell, Commerce Union Bank Bldg., Nashville, Tenn. CD 10/23/50.

MIDDLE WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Ohio**—Ohio Turnpike Comn., 139 E. Gay St., Columbus, Zone 15,

A. J. Baltes Constr. Co., Box 258, Norwalk, O., LB $5,533,897, four-mile sect. through Elyria, incl. two box culverts, five single bridges and seven twin bridges, Contr. C-23, Lorain Co. Bids July 7. CD 6/16.

▲† **Zisken Constr. Co.**, 4430 W. Roosevelt Rd., Chicago, Ill., CA, $1,488,875, two underground structures, Cook and DuPage Counties, ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids June 18, awarded June 29. CD 5/26.

▲ **Overland Constr. Co.**, 205 W. Wacker Dr., Chicago 6, Ill., CA, $1,514,274, superstructure for bridge W. Van Buren St. over Chicago River, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Apr. 27. CD 5/4, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Ferdinand Dornbusch**, 5660 Samver Dr. Cincinnati, O. Owner Builds. $1,500,000. 50 one story bsmnt., brick HOMES, Springdale Rd., CINCINNATI, O. Allan Stone, 952 Marion Ave., Cincinnati, O., engr. Awarded July 6.

▲ **Gust K. Newberg Constr. Co.**, 2040 N. Ashland Ave., Chicago 14, Ill., CA Approx. $3,000,000 PLANT addn., Walton Hills, CLEVELAND, O. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. CD 6/23.

▲ **Herlihy Mid-Continent Co.**, 135 S. LaSalle St., Chicago 3, Ill., CA $1,026,782. PARKING GARAGE, State St. between Congress and Harrison Sts., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids May 18, awarded July 1. CD 5/25, under LB.

▲ **Hurwitz Constr. Co.**, 5310 N. 25 St., Milwaukee, Wis. Owner Builds. $1,056,000. eighty-eight 1 story, 24x36 ft. frame HOMES, MILWAUKEE, WIS.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Missouri and Kentucky**—BA 8/5—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., placement approx. 72,000 tons 10 in. average thickness riprap under bank paving on previously graded bank of Mississippi River at Pritchard, Mo. (Mile 956 AHP), Campbell, Ky. (Mile 954 AHP) and Williams, Ky. (Mile 938 AHP), Parcel I located on right bank of Mississippi River at Pritchard, Mississippi Co., Mo., Parcels II and III located on left bank of Mississippi River at Campbell, Hickman Co., Ky. and Williams, Hickman-Fulton Counties, Ky., CIVENG-40-041-55-4. CD 5/25/44.

BIDS ASKED—BUILDINGS

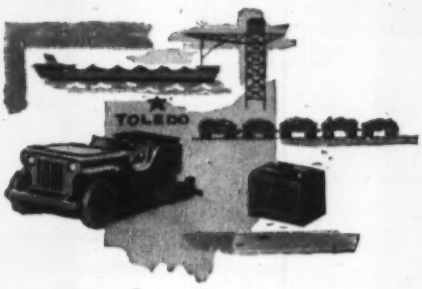
▲ **Tex., Dallas**—COLISEUM-GYMNASIUM—BA 8/10—Southern Methodist University, Dallas, coliseum-gymnasium, 10,000 seating capacity, 232x421 ft.; swimming pool, limestone and granite exterior, $2,250,000. Plans deposit $75. Extended date. Smith & Mills, Mercantile Sec. Bldg., and Mark Lemmon, Thomas Bldg., archts. CD 7/2.

▲ **Tex., Houston**—SHOPPING CENTER—BA 8/24—Gulfgate Shopping Center, c/o Theodore W. Berensen and Ben McGuire, Bankers Mortgage Bldg., Part of Sect. 1, superstructure for 450,000 sq. ft. masonry main bldg. of shopping center, $4,500,000; 3 story bsmnt.,

(Continued on page 54)

Toledo Prefers

Concrete Pressure Pipe



Toledo engineers prefer concrete pressure pipe for the city's water supply mains. In 1948 an 8,600-foot installation, known as the Bancroft Street Crosstown Main, was completed. Since then 24″, 36″, 48″ and 72″ concrete pressure pipe has been used in major additions to the city's water supply system. Just recently contracts have been signed by Lucas County authorities and work is in progress on additional projects in the Toledo area, involving 16″ and 24″ pipe.

There are a number of reasons for Toledo's increasing use of concrete pressure pipe. Sustained high-carrying capacity and long life are two of the most important. Another is low maintenance cost. The original cost is also low and installation is accomplished quickly and easily.

Talk to Toledo engineers when you plan your next water line. You'll learn why they like concrete pressure pipe—not only for transmission lines, but for city distribution mains as well.

Member companies manufacture concrete pressure pipe in accordance with nationally recognized specifications

Concrete PRESSURE Pipe

WATER FOR GENERATIONS TO COME

AMERICAN CONCRETE PRESSURE PIPE ASSOCIATION
228 North LaSalle Street
Chicago 1, Illinois

(Continued from page 52)

masonry 200,000 sq. ft. shopping center (1st sect.) (to be occupied by Joske Bros.), $2,500,000; hard type paved auto parking center, $275,000. Irving B. Klein & Assocs., 1317 Austin St., Houston, and John Graham, Jr., Dexter Horton Bldg., Seattle, Wash., archts.-engrs. CD 5/19/53, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Williams Bros. Co.**, National Bank Bldg., Tulsa, Okla. CA Est. $12,500,000. 260 mi. 16 in. crude oil pipe line from Clearbrook to Minneapolis-St. Paul, MINNESOTA. Minnesota Pipe Line Co. (Southern Production and Woodley Petroleum Co.), c/o contractors.

▲ **Woermann Constr. Co.**, 3800 West Pine Blvd., St. Louis 8, Mo. CA Total est. $2,000,000. constr. first unit 18 m.g.d. capacity of new WW plant, on Missouri River, 3 mi. upstream from Halls Ferry road near Charbonier Rd., incl. river intake storage facilities pumping plant, road from Charbonier Rd. to plant; ST LOUIS COUNTY, MO. St. Louis County Water Co., W. Victor, Weir, pres., 6600 Delmar Blvd., University City 5, Mo. CD 6/11.

▲† **T. C. Bateson Constr. Co.**, Irwin-Keasler Bldg., Dallas, Tex. CA $5,620,398. maintenance hangar, engine maintenance bldg., 2 storage bldgs., water, heating plant, etc., Forbes Air Force Base, near TOPEKA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids June 25, awarded June 30. CD 6/30, under LB.

▲ **Houston Contg. Co.**, 2707 Ferndale St., Houston, Tex. CA Approx. $1,080,000. 72 mi. 8 in. welded joint crude oil line from Hallettsville to Brookshire, TEXAS. Shell Oil Co., Shell Bldg., Houston, Tex.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **C. H. Leavell & Co.**, 1900 Wyoming St., El Paso, Tex. and **Dan Ponder, Inc.**, Box 344, El Paso, Tex., CA $3,746,616. constr. 9 EM BARRACKS. Serial No. ENG-29-005-54-106, Fort Bliss, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids May 28. CD 6/16, under LB.

▲ **D. L. Harmon**, Midland, Tex., CA Approx. $1,000,000. 20 story brick, stone, granite base, rein.-con., structural steel, 10,000 sq. ft. floor space OFFICE, MIDLAND, TEX., Jack B. Wilkinson, Wilkinson Bldg., Midland, Tex. Davis S. Castle, 1082½ N. First St., Abilene, Tex., archt. CD 8/25/50.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Calif., Upland**—SCHOOL—BA 8/2—Chafey Union High School, Dist., Fifth and Euclid Sts., Ontario, 108,000 sq. ft. precast concrete. Upland High School, $2,000,000, Neptune & Thomas, 567 E. Green St., Pasadena, archts. CD 6/14/49.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **L. H. Hansen & Sons**, Box 1784, Fresno, Calif. LB, $1,697,984. GYMANSIUM, Bakersfield College, BAKERSFIELD, CALIF. Kern County High School and Junior College Dist., 312 Bernard St., Bakersfield, Calif. Wright, Metcalf & Parsons, 2323 "I" St., Bakersfield, Calif., archt. Bids July 2. CD 2/6/53.

▲ **Watt Constr. Co.**, 15127 Crenshaw Blvd., Los Angeles, Calif. CA, $1,643,000. 173 frame, stucco DWELLINGS, Carfox, Ferina, Highdale and Ives Sts. in Tract 19795, BELLFLOWER, CALIF. Mont Ray Co., 15127 Crenshaw Blvd., Los Angeles, Calif.

▲ **Ford J. Twaits Co.**, 449 S. Beaudy St., Los Angeles, Calif. CA, $1,250,000. CHEMISTRY-BIOLOGY BLDG., PASADENA, CALIF. California Institute of Technology, 1201 E. California St., Pasadena, Calif. Theodore Jaehn, c/o owner, structural engr. CD 7/12, under LB.

CANADA

BIDS ASKED—BUILDINGS

▲ **Ont., Toronto**—WAREHOUSE—BA 7/26—T. Eaton Co. Ltd., 190 Yonge St., 1 story, 800x1,400 ft. warehouse, truck wells, railway, receiving docks, Barrie Hy. at Sheppard Ave. $7,900,000. Allward & Gouinlock, 57 Bloor St. W., archts.

▲ **Ont., Toronto**—EMPLOYMENT and TRAINING—BA 7/27—Canadian National Institute of the Blind, 186 Beverly St., Unit D 1 and 2 story, 225x480 ft., rein.-con., steel employment and training bldg., Bayview Ave. $4,000,000. Stanford & Wilson, 86 Charles St. E., archts. Wallace, Carruthers & Assoc., Ltd., 35 Isabella St., engrs. CD 1/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **C. H. Whitham Ltd.**, 10570 113 St., Edmonton, Alta. CA Est. $3,000,000. 3 story, bsmnt., 192,000 sq. ft. DEPARTMENT STORE addn. EDMONTON, ALTA. Hudson Bay Co. 79 Main St., Winnipeg, Man. CD 3/24.

▲ **James Kemp Constr. Co.**, 121 Vansitmart St., Hamilton, Ont. CA Est. $3,000,000. SCHOOL, East 15 St. and South Bend Rd., HAMILTON, ONT. Hamilton Bd. Educ., 367 Hunter St. W., Hamilton, Ont. CD 3/19, under LB.

▲ **Robertson-Yates Corp. Ltd.**, 400 Wellington St. W., Hamilton, Ont. CA $1,779,050. three BARRACKS, one mess, Army Station, PETAWAWA ONT. Defense Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids June 15. CD 5/25.

PUERTO RICO

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **The Lummus Co.**, 385 Madison Ave., New York 17, N. Y., CA design and construct REFINERY, process approx. 25,000 bbls. daily of Venezuelan crudes, at GUAYANILLA BAY, PUERTO RICO. Commonwealth Oil Refining Co., Inc., c/o contractors.

AMERICANS ABROAD

BIDS ASKED—HEAVY CONSTRUCTION

Iraq—BA About November—The Development Bd. of the Govt. of Iraq, Baghdad, constr. dam and appurtenant works for the Derbendi Khan Proj. on the Diyala-Sirwan River approx. 35 kilometers southwest of Halabja and some 230 kilometers northeast of Baghdad. Harza Eng. Co., 400 W. Madison St., Chicago 6, Ill., U. S. A., engr.

Proposed Projects

WATER SUPPLY

▲ **O., Cleveland**—City, Dpt. P. Utilities, Emil J. Crown, dir., City Hall, constr. Clague Road water intake from Lake Erie, $5,500,000; Pleasant Valley Rd. water main, $1,000,000. Havens & Emerson, Leader Bldg., Zone 14, consult. engrs. George W. Hamlin, Utilities Eng. Comr. CD 1/27.

▲ **Tex., Arlington**—City, bond election Sept. 11, water supply lake, $1,975,000; water main, lake to city limits, $300,000; c.i. water mains, distr. lines, $375,000; WW sys. rehabilitation work, $175,000; water storage, $200,000; water pumping unit, $275,000. CD 6/18.

▲ **Tex., Denton**—City, concrete reservoir, 16 ft. diam. and 63 ft. high, $2,000,000; WW intake structure, $200,000; 12 mi. water main to bring water from Garza-Little Elm Dam to city limits, $238,200. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 4/22.

SEWERS, WASTE DISPOSAL

▲ **Mo., Springfield**—City, $6,600,000 bond election Aug. 17, sewerage rehabilitation. Russell & Axon, 408 Olive St., St. Louis, Zone 2, consult. engrs. CD 1/19/54.

▲ **Wash., Mercer Island**—Mercer Island Sewer Dist., Mercer Island, voted bonds, sewerage sys. $2,500,000. Carey & Kramer, 1917 1 Ave., Seattle, consult. engrs. CD 5/10.

BRIDGES

▲ **O., Cleveland**—Baltimore & Ohio R. R. Co., J. W. Purdy, engr., Maint. & Way, (Western Region), Temple Bar Bldg., Cincinnati, bascule railroad bridge over Cuyahoga River at Sycamore St. $3,000,000. Hardesty & Hanover, 101 Park Ave., New York 17, N. Y. consult. engrs. CD 11/18.

STREETS AND ROADS

▲ **OHIO**—State Hy. Dpt., Columbus, **Clark and Montgomery Counties**—28 mi. Rte. U. S. 40, Springfield to Rte. 69, Rte. 69 to Rte. 25, Rte. 25 to Englewood. $20,000,000. Alden E. Stilson & Assocs., 209 S. High St., Columbus, consult. engrs. CD 11/6.

▲ **OHIO**—State Hy. Dpt., Columbus,
Brown Co.—4.6 mi. U. S. Rte. 52, $1,200,000, Michael Baker, Jr., Inc., Baker Bldg., Rochester, Pa., consult. engr.
Butler Co.—10.2 mi. St. Rte. 4, Hamilton to Middletown, $4,000,000, Vogt, Ivers, Seaman & Assoc., 32 W. 6 St., Cincinnati, consult. engrs.
Hancock Co.—7.7 mi. U. S. Rte. 25 and 68, Findlay By-Pass, $8,000,000, H. W. Lochner & Co., 150 N. Wacker Dr., Chicago, Ill., consult. engrs.
Lawrence Co.—detailed plans 6 mi. U. S. Rte. 52, and preliminary studies 12 mi., $5,000,000, Michael Baker, Jr., Baker Bldg., Rochester, Pa., consult. engr.
Lorain Co.—2 mi. Rte. 6, Vermilion to Lorain, $4,200,000, Browne, Roberts & Assocs., Marion, consult. engrs.
Muskingum Co.—6.6 mi. Rte. 22, $3,000,000, Sanzenbacher, Morris & Taylor, 302 Sylvania Ava., Toledo, consult. engrs.
Richland Co.—7 mi. U. S. Rte. 30, Mansfield Bypass, $7,000,000, Vogt, Ivers, Seaman & Assocs. 32 W. 6 St., Cincinnati, consult. engrs.
Ross and Pickaway Counties—11.5 mi. U. S. Rte. 23, $6,000,000, Elmer S. Barrett Assocs., Box 372, Chillicothe, consult. engrs.
Stark Co.—detailed plans 7 mi. U. S. Rte. 62 and preliminary studies 7.8 mi. $4,000,000, Brown & Blauvelt, 468 4 Ave., New York, N. Y., consult. engrs.
Summit and Stark Counties—study 35 mi. and detailed plans 27 mi. U. S. Rte. 21, $13,000,000, Charles E. DeLeuw, 150 N. Wacker Dr., Chicago 6, Ill. consult. engr.
Wood Co.—plans on 4 mi. U. S. Rtes. 20 and 25, Perrysburg By-Pass and preliminary studies 3 mi. Maumee By-Pass, $3,000,000. H. W. Lockner & Co., 150 N. Wacker Dr., Chicago, Ill., consult. engrs. CD 12/4.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City,
Garvin Co.—9 mi. relocation of U.S. 77 between Wynnewood and Davis. $1,300,000. G. H. Bittle, c/o owner, engr.

▲ **Tex., Arlington**—City, bond election Sept. 11, streets paving and imprvs. $1,250,000.

EARTHWORK, WATERWAYS

▲ **Tex., Raymondville**—Willacy County Navigation Comn., Raymondville, bond election July 17, dredging Ship Channel, Port Mansfield to Gulf of Mexico. $2,500,000. CD 6/14/49.

▲ **Washington**—Wahkiakum County Public Utility District, Cathlamet; and Pacific County Public Utility District, South Bend, earthfill hydro-dam in Grays River with 24,000 ft. tunnel to power plant, $5,000,000. Cornell, Howland, Hayes & Merryfield, Corvallis, Ore., consult. engrs.

▲ **Ont., Glen Allan**—Dpt. P. Wks., Hunter Bldg., Ottawa, dam on River Conestogo for purpose of flood control and water conservation, $1,000,000.

AIRPORTS

▲† **Calif., Muroc**—HANGAR, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, plans by Albert C. Martin & Assoc., 333 S. Beandry St., Los Angeles, hangar, shop bldg., storage igloo, swimming pool, $3,370,000; plans by Stiles Clements, Van Nuys Bldg., 210 W. 7 St., Los Angeles, security bldg., bulk storage facility, civilian club, $235,000; plans by Keebig & Keebig, 3142 Wilshire Blvd., Los Angeles, electric, gas, water, sewage facilities, $400,000, Edwards Air Force Base. CD 12/10/52.

▲† **Calif., Muroc**—TECHNICAL, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, technical and control bldgs., test stand, $1,000,000, Aerojet General Corp., 6352 N. Irwindale St., Azusa, Calif., consult. engrs.; 2 fire stations, weather bureau bldg. Edwards Air Force Base, $308,800. CD 12/10/52.

▲† **Mich., Traverse City**—AIR DEFENSE BASE—U. S. Eng., 1900 Cadillac Tower, Detroit, plans by Hawley Cutting & Assoc., Swetland Bldg., Cleveland, O., Jet Air Defense Base, Homestead site, Beulah, near here $8,635,000.

PUBLIC BUILDINGS

▲ **Calif., Monrovia-Duarte**—SCHOOLS—Monrovia-Duarte High School District, $2,000,000 bond election Oct. 15, for school imprvs. CD 3/23/53.

▲ **Ill., Chicago**—APARTMENTS—Chicago Housing Auth., 608 S. Dearborn St., plans by Holabird, Root & Burgee, 180 N. Wabash St., Zone 1, 8 apartments, 1,650 units, State St. at 35 St. $15,000,000. CD 2/2/50.

▲ **Mich., Holland**—HOSPITAL—City, City Comn., $500,000 bond election Aug. 3, brick, steel hospital addn. $1,100,000. H. E. Beyster & Assoc., Inc., 2000 Industrial Bank Bldg., Detroit, archts. CD 6/2.

▲ **Minn., Minneapolis**—SCHOOL—Bd. Educ., M. E. Robinson, secy., H. Held, archt.-engr., 807 N. E. Broadway, plans by Thorshov & Cerny, 400 Metropolitan Bldg., Junior High School between 29 and 30 Aves. northeast and between Garfield and Hayes Sts. $1,000,000 (first phase). CD 1/18.

▲ **Minn., Stillwater**—SCHOOLS—Bd. Educ., H. A. Swanson, clk., voted $1,750,000 bonds June 29, 3 grade schools, addns. to 2 grade schools. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. CD 6/16.

▲ **O., Maumee**—COTTAGES—Comrs. Lucas Co., Court House, Toledo, bond election Nov. 2, erect six 1 story cottages, incl. new receiving bldg., new isolation bldg., oil-heat sys. at Lucas County Children's Home, River Rd. $1,500,000.

▲ **Pa., Brockway**—HIGH SCHOOL—Brockway Washington Snyder Joint Schools, Brockway, plans by Hunter, Caldwell & Campbell, 5 Ave. and 36 St., Altoona, 2 story brick high school addn. $1,300,000.

▲ **Pa., Phila.**—HIGH SCHOOL—Bd. Educ., 21 and Winter Sts., plans by Thalheimer & Weitz, 1325 Walnut St., Benjamin Franklin Senior High School. $3,250,000. CD 6/21.

▲ **Tex., Austin**—HIGH SCHOOL—Austin Independent School Dist., N. Prentice, pres. Bd. Trustees, 701 E. 11 St., plans by Kuehne, Brooks & Barr, Perry-Brooks Bldg., masonry Lamar Junior High School. $1,750,000. W. Clark Craig, 3710 Gilbert St., Austin and Blum & Guerrero, 4930 Maple St., Dallas, consult. engrs.

▲ **Ont., Toronto**—HOUSING—Municipality of Metropolitan Toronto, City Hall, housing development in North York County in Metropolitan Toronto, incl. 101 apartment bldgs., on 120-acre site, Lawrence Ave. and Bathurst St. Area, $15,893,000. CD 7/27/53.

COMMERCIAL BUILDINGS

▲ **Ala., Mobile**—SHOPPING CENTER—Crichton Shopping Center, Inc., Union Ave., plans by Platt Roberts & Co., Merchants National Bank Bldg. shopping center. $2,000,000.

▲ **'Ala., Montgomery**—HOSPITAL—St. Margaret's Hospital, 834 Adams Ave., plans by Chas. H. McCauley, Jackson Bldg., Birmingham, hospital. $1,500,000. CD 4/15.

▲ **Calif., Los Angeles**—OFFICE—Tishman Realty & Constr. Co., 445 Park Ave., New York 22, N. Y., 12 story office, Wilshire Blvd. $2,000,000.

▲ **Calif., LaMirada**—DWELLINGS—Devon Constr. Co., 739 N. Highland Ave., Los Angeles, plans by David Freedman, 407 Commercial Center St., Beverly Hills, and Palmer & Krisel, 827 Moraga Dr., Los Angeles, 539 frame, stucco dwellings in LaMirada Dist. $5,000,000.

▲ **Calif., Santa Monica**—OFFICE—General Telephone Co., Santa Monica, plans by Albert C. Martin & Assoc., engrs.-archts., 333 S. Beaudry Ave., Los Angeles, 2 story, 200,000 sq. ft., steel, rein.-con. office and garage. $3,000,000.

▲ **Del., Wilmington**—HOSPITAL—St. Francis Hospital, 831 Tatnall St., hospital addn. $1,500,000.

▲ **N. Y., Brooklyn**—APARTMENT—Bath Beach Building Corp., 66 Court St., Zone 2, plans by Kavy & Kavovitt, 44 Court St., Zone 2, 6 story apartment, 1717 Seventeenth Court. $1,006,400.

▲ **N. Y., Brooklyn**—APARTMENT—Street Leasing Corp., 97-27 64 Rd., Rego Park, N. Y., plans by George G. Miller, 125 W. 45 St., New York, Zone 19, 6 story apartment, 2411-59 Nostrand Ave. $1,500,000.

▲ **N. Y., New York**—CHILDRENS CENTER—Children's Aid Society, 105 E. 22 St., Zone 10, 2 story Harlem Children's Center, 117 St., 118 St., Fifth Ave. and Lenox Ave. $1,000,000.

▲ **N. Y., New York**—STOCK EXCHANGE—20 Broad Street Building, c/o General Realty & Utilities Corp., 285 Madison Ave., plans by Kahn & Jacobs, 2 Park Ave., and Sydney Goldstone, 285 Madison Ave., 27 story New York Stock Exchange Bldg., 20 Broad St. $15,000,000.

▲ **O., Hamilton**—SHOPPING CENTER—James R. Williams Investment Co., Union Trust Bldg., Cincinnati, 170,000 sq. ft. shopping center, Dixie Hy. $2,500,000.

▲ **Pa., Bala Cynwyd**—APARTMENT—Stenton Hills, Inc., 6730 York Rd., Phila., apartment, Belmont Ave. $2,400,000.

▲ **Tex., Austin**—OFFICE—Plymouth Life Insurance Co., 7 and Colorado Sts., plans by Kuehne, Brooks & Barr, Perry-Brooks Bldg., 6 story addn. to 3 story masonry office. $1,750,000. CD 7/1.

▲ **Tex., Beaumont**—MOTEL—Western Skies Motel, c/o Leon Green, 2806 Old Spanish Trail, Houston, 75-unit motel. $1,000,000.

▲ **Tex., Fort Worth**—MOTEL—Leon Green, 1834 Wichita St., Houston, plans by Bailey A. Swenson, 3106 Brazos St., Houston, 1 story masonry, concrete motel, incl. 175 air-conditioned units, restaurant, heliport, riding stables, swimming pool and playground. $1,250,000.

▲ **Tex., Fort Worth**—MOTEL—Western Skies Motel, c/o Leon Green, 2806 Old Spanish Trail, Houston, 75-unit motel. $1,000,000.

▲ **Tex., Houston** — APARTMENT — Houston Building Corp., c/o Tom Muchard, 2819½ Eastgrove St., plans by Irving R. Klein & Assocs., 1317 Austin St., Houston, and Leon & Lionel Levy, 158 E. 35 St., New York, N. Y., 15 story, 420-unit "Park Towers" Apartment, east of Prudential Bldg. on Holcombe Blvd. $4,500,000.

▲ **Tex., Houston**—SHOPPING CENTER—Palms Center Corp., 1317 Austin St., plans by Irving B. Klein & Assocs., proj. archts., 1317 Austin St., 1 and 2 story, 213,215 sq. ft. masonry shopping center, Griggs Rd. and S. Parks Blvd. $2,000,000.

▲ **Man., Winnipeg**—OFFICE—Lishwol Ltd., 294 Kingsway, office on site of Time Bldg. $3,500,000.

▲ **Ont., Toronto** — APARTMENT — Aljohn Investments Ltd., c/o Sidney Bregman, archt., 7 Adelaide St. East, 3 story, 140-suite, E-shaped, brick, steel, concrete apartment, on Rosedale Rd. $1,500,000.

INDUSTRIAL BUILDINGS

▲ **Miss., Natchez**—PLANT—Armstrong Rubber Co., 475 Elm St., West Haven, Conn., plant addn. $2,500,000.

▲ **Neb., Hastings**—GRAIN ELEVATOR—Morrison-Quirk Grain Corp., Hastings, grain elevator addn. $1,000,000.

▲ **N. C., Kings Mountain**—PLANT—Foote Mineral Co., 18 W. Chelton Ave., Phila., Pa., plant addn. $1,000,000. CD 9/19/52.

▲ **W. Va., South Charleston**—PLANT—Food Machinery & Chemical Corp., Westvaco Chemical Div., South Charleston, liquid chlorine section plant addn. $2,500,000.

▲ **B. C., New Westminster**—PAPER PLANT—Martin Paper Products Ltd. (Powell River Co. Ltd.), 510 W. Hastings St., Vancouver, paper plant, $1,000,000.

▲ **B. C., North Vancouver**—DISTILLERY—Subsidiary of Canadian Schenley Ltd., Victoria, distillery, $1,500,000.

UNCLASSIFIED

▲ **Mass., Boston — PIER — Commonwealth of Mass.,** Port of Boston Comn., John M. Bresnahan, dir., Pier No. 5, South Boston, modernization Pier No. 5, South Boston, $1,800,000. Fay, Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs.; modernization of grain elevator, Hoosac Pier, Charlestown, $415,000. Jackland & Moreland, 600 Park Square Bldg., Boston, consult. engrs. CD 5/19.

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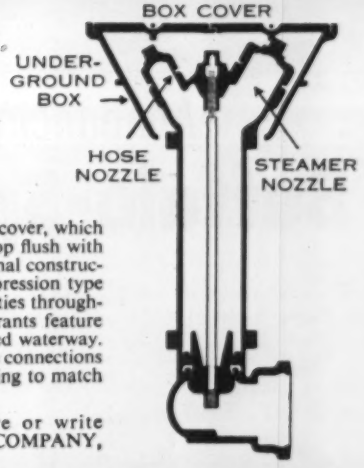

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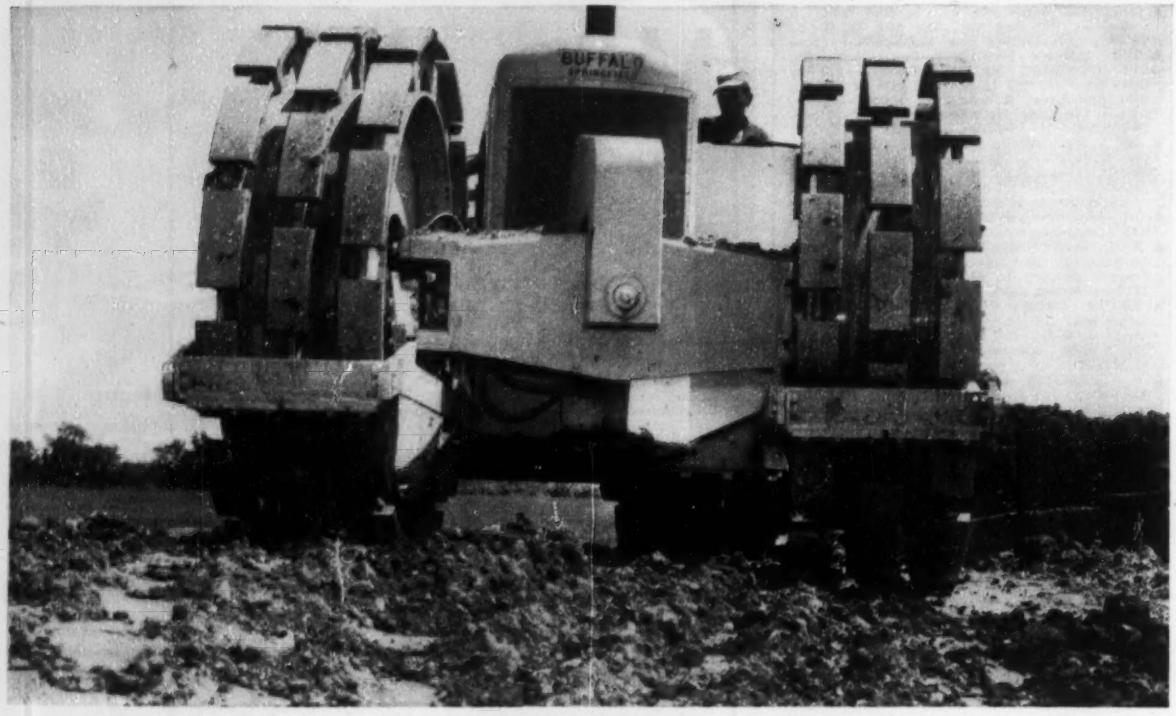

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The Kompactor is self-propelled, reversible, and easy to maneuver on steep embankments, can work in close to abutments, culverts, etc.

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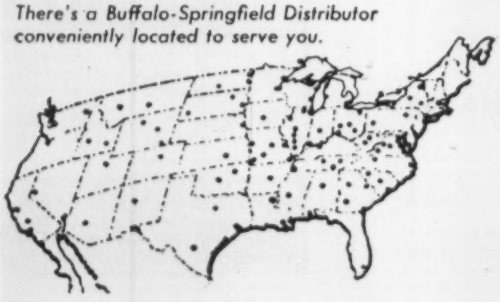


The unique rolls of the Kompactor are *segmented*. The staggered "islands" that form the rolling surface enter loose material with minimum displacement, either forward or horizontally. They leave without disturbing compacted areas in any way. All compaction effort is *downward*, resulting in greater and more uniform density from lower elevations to top surface. As a result, *two passes with the Kompactor will often meet density requirements!*

Before you bid another soil compaction job, find out more about the Buffalo-Springfield Kompactor. It may completely change your time and cost picture, give you a clear-cut advantage in bidding those close jobs!

Write today for full information.

The Buffalo-Springfield Roller Co.
Springfield, Ohio

BUFFALO THE STANDARD OF COMPARISON **SPRINGFIELD**
SPRINGFIELD, OHIO

THE LEADER IN ROAD ROLLER DESIGN AND MANUFACTURE.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 27 Massachusetts

▲† Massachusetts—AAA FACILITIES—BA On Or About 8/20—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, special AAA facilities at Blue Hills and Needham, incl. concrete block bldgs., electrical distr. sys., water distr. sys., sanitary sewerage sys., gas distr. sys., located at Quincy, Randolph and Needham. $1,000,000-$2,000,000. Plans deposit $50.

BIDS ASKED—BUILDINGS

▲ Conn., Willimantic—SCHOOL—BA 7/28—State of Conn., Ralph G. Macy, P. Wks. Comr., 491 State Office Bldg., Hartford, Windham Regional Technical School, Birch St. adjacent to Knight Field. $1,400,000. Plans deposit $100. Joseph Della Valle, 153 Court St., New Haven, archt. Arthur G. Beaulieu & Assoc., 2348 Whitney Ave., New Haven, structural engr. CD 6/21.

Mass., Avon—SCHOOL—BA 8/20—Town, H. Carroll Gilgan, supt. Schools, Town Hall, brick, concrete Consolidated School, W. Main St. between Victory Ave. and Pond St., $950,000-$1,000,000. Edgar T. P. Walker & Theodore B. Hanna, 131 State St., Boston, archts. Nisso T. Aladjem, 102 Mt. Auburn St., Cambridge, struct. engr. Anastasi & Gale, 120 Tremont St., Boston, elec. engrs. CD 6/11/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Jefferson Constr. Co., 75 First St., Cambridge, Mass. LB $1,043,000. est. $1,000,000-$2,000,000. communications facilities, Limestone Air Force Base, ENG-19-016-54-121, LIMESTONE, PERHAM and NORTH LYNDON, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids July 8. CD 6/23.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Wexler Constr. Co., 118 Meadham St., Newton Highlands, Mass. LB $1,588,000. Junior high SCHOOL, NEWTON, MASS. City, City Hall, Newton, Mass. Bids July 13. CD 6/22.

▲ Ernest F. Carlson, Inc., 1694 Main St., Springfield, Mass. CA Est. $1,000,000. MOTEL, Federal and Pearl Sts., SPRINGFIELD, MASS. Federal Plaza Motel, James C. Haberman, Inc., 17 Pearl St., Springfield, Mass. Elroy Webber, 36 Beechwood Ave., Springfield, Mass., archt.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 27 Maryland

▲ N. Y., Mineola—PARK CLUB HOUSE—BA 8/17—Bd. Supervs. Nassau Co., Old County Court House, County Park Clubhouse at Salisbury Park. $1,700,000. Chapman, Evans & Delahanty, 50 Broadway, New York, Zone 4, consult. archts. Lawrence J. Lincoln, c/o owner, archt.

▲† N. Y., West Point—BA 8/26—U. S. Eng., 80 Lafayette St., New York, Zone 13, sewage disposal plant at USMA. $1,000,000-$3,000,000. Alexander Potter, 50 Church St., New York, Zone 7, engr. CD 10/10/46, under Public Buildings.

BIDS ASKED—BUILDINGS

Pa., Mountville—HOME FOR AGED—BA 7/26—Sisters Adorers of The Most Precious Blood, Mountville, St. Ann's Home for Aged Women addn., alterations. $650,000. DeGroot & Assocs., 3939 Morrison St. N.W., Wash., D. C., archts.

▲ Pa., Phila.—HIGH SCHOOL—BA 7/27—Roman Catholic Archdiocese of Phila., 310 N. 19 St. S.E., Catholic Girls High School. $2,000,000. Paul Henon, Fox Bldg., archt. CD 7/9.

▲ Del., Newark—HIGH SCHOOL—BA 7/28—Newark Bd. Educ., Newark, high school. $2,000,000. E. William Martin, 830 West St., Wilmington, archt. CD 10/29.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ PENNSYLVANIA—Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg,
The Latrobe Constr. Co., Latrobe, Pa., CA $1,045,106, resurf. 22 mi. with b. conc. reinforced by steel welded wire fabric of the Pennsylvania Turnpike near Somerset between Laurel Hill Tunnel and Allegheny Tunnel. CD 10/28.

▲ PENNSYLVANIA—Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg,
H. J. Williams Co., Inc., York, Pa., LB $3,334,253, constr. 2.96 mi. sect. of Northeast Exten. in Lower Macungie, Upper Macungie and South Whitehall Twps., Lehigh Co. Bids July 14. CD 6/29.

▲ Dpt. Procurement, City Hall Annex, Phila., Pa., rejected bids June 3, Torresdale Filter Plant, sedimentation basins and equipments, PHILA., PA. LB $2,860,161. New bids July 19. CD 6/18, under LB.

DELAWARE—State Hy. Dpt., Dover,
A. S. Wikstrom, Inc., Mottville, Skaneateles, N. Y., LB $820,455, Walnut Street Exten., Sect. 3, Walnut St. Bridge substructure, Contr. 1224 (3), New Castle Co. Bids July 7. CD 6/15.

▲† Frederick Raff Co., Inc., P.O. Box 899, Hartford, Conn., CA $1,558,635, paving, site imprvs. and utilities, Dover Air Force Base, No. 36-109-54-188, DOVER, DEL. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids June 16. CD 6/24, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ C. E. Youngdahl & Co., Inc., 29-28 41 Ave., Long Island City 1, N. Y., LB $10,268,000, general constr.;
H. Sand & Co., Inc., 11 Park Pl., New York 7, N. Y. LB $1,243,200, heating;
Martin Epstein Co., Inc., 227 Lewis Ave., Brooklyn 21, N. Y., LB $671,688, electrical work;
Far Plumbing Co., 2018 Crotona Parkway, New York 60, N. Y. LB $1,423,333, plumbing for Bay View HOUSES, Proj. No. NYC-24, bounded by Seaview Ave., E. 102 St., Shore and Rockaway Parkways, excluding northerly portion of area bounded generally by Seaview Ave., E. 99 and E. 98 Sts., BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids July 13. CD 6/16.

▲ Paradise Village Homes, c/o Bonded Realty Corp., Sunrise Hy., Lindenhurst, N. Y. Owner Builds. $5,000,000. 1,000 HOUSES, tract on Montauk Hy., MASTIC PARK (PATCHOGUE) N. Y.

▲ Leon D. DeMatteis & Sons, 827 Elmont Rd., Elmont, N. Y., CA $1,753,418, general constr. HIGH SCHOOL in Morton Estates area north of Southern State Parkway;
Edward Corning Co., 204 E. 39 St., New York 16, N. Y. CA $1,835,114, general constr. HIGH SCHOOL, Hungry Harbor Rd., south of Sunrise Hy. VALLEY STREAM, N. Y. Central High School Bd., Fletcher Ave., Valley Stream, N. Y. Bids June 22. CD 5/21.

▲ Roann Building Corp., 1865 Ocean Ave., Brooklyn, N. Y. Owner Builds. $4,000,000. four 6 story APARTMENT, Kimball Ave., YONKERS, N. Y. Morris Rothstein, & Son, 186 Joralemon St., Brooklyn 2, N. Y., archts. CD 4/16/53.

▲ Skidmore Realty, Inc., c/o Henry H. Moger, Jr., archt., 250 Main St., White Plains, N. Y. Owner Builds. $1,400,000. 143 HOUSES, Remsen and Rugby Rds., YONKERS, N. Y.

▲ Majestic Homes, c/o Erwin Gerber, archt., 1180 Raymond Blvd., Newark, N. J. Owner Builds. $1,250,000. 93 HOUSES, Avenue A and 27 St., BAYONNE, N. J.

▲ Berkibile Bros., 625 Swank Bldg., Johnstown, Pa. CA, $1,162,778. 7 story, brick, steel HOSPITAL addn., alterations JOHNTOWN, PA. Conamaugh Valley Memorial Hospital, Johnstown, Pa. Bids June 23. CD 7/1, under LB.

▲ Branna Constr. Co., 625 Farmers Bank Bldg., Pittsburgh, Pa., CA Approx. $1,000,000. 1 story, 300x300 ft. brick, block, steel WAREHOUSE and OFFICE, 35 St. and AVRR, PITTSBURGH, PA. Giant Eagle Markets, (O.K. Grocery Co.) 1728 Smallman St., Pittsburgh, Pa. Bids June 8. CD 6/2.

▲ Clement Martin, Inc., 6230 Penn Ave., Pittsburgh, Pa. LB $1,680,229. 3 story, bsmnt., brick, block, steel Senior HIGH SCHOOL addnn, Mt. Lebanon, PITTSBURGH 4, PA. Bd. Educ. Mt. Lebanon, 735 Washington Rd., Pittsburgh, Pa. Bids July 8. CD 6/24.

▲ Pittsburgh Bridge & Iron Works, Union Bank Bldg., Pittsburgh, Pa., CA, $1,250,000. 100x230 ft. concrete, block, sheet metal FORGING PRESS BLDG. addn., 40 ton crane, 2,000 ton forging press, TITUSVILLE, PA. Universal Cyclops Steel Corp. Titusville, Pa. CD 2/4/48.

▲ Dover Builders, Inc., Odessa, Del., CA $1,000,000. RESIDENTIAL DEVLOPMENT, Newkirk Estates, NEW CASTLE, DEL. Bear Constr. Co., c/o contractor.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 28 Louisiana July 30 Tennessee
STREETS AND ROADS
July 28 Louisiana July 30 Tennessee

BIDS ASKED—BUILDINGS

Ga., Perry—SCHOOLS—BA 8/3—Houston Co. Bd. Educ., Perry, school projects. $800,000. Plans deposit $50. CD 5/6.

▲† Va., Fort Belvoir—HOSPITAL—BA On Or About 8/31—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C. 250-bed rein.-con. U. S. Army Hospital, Serial No. ENG.-49-080-55-2-(2). $4,000,000. Plans deposit $100. CD 11/21/52.

▲ Va., Hornsbyville—REFINERY—Bids Asked—Pan American Refining Co., 122 E. 42 St., New York, N. Y. (selected list of bidders), 1st sect. refining plant at Godwin Neck. $25,000,000. CD 3/16.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† R. H. Wright & Son, 1050 N. E. 5 Terrace, Fort Lauderdale, Fla., CA, $1,327,000, runway and apron paving and lighting, Marine Corps Air Station, NOY 76255, MIAMI, FLA. Dpt. Navy, P. Wks. Officer, Naval Base, S. C. CD 6/29, under LB.

▲ ALABAMA—State Hy. Dpt., Montgomery,
Hardaway Constr. Co., 15 11 St., Columbus, Ga. CA, $954,774. 9.044 mi. roadway, Morgan Co.;
Floyd S. Milford, 1412 S. 13 St., Birmingham, Ala. CA, $507,012. grading, drainage roadway, Limestone Co.;
J. R. Bryant Constr. Co., 121 Molton St., Montgomery, Ala. CA, $643,318. 6.3 mi. Montgomery Co.;
MacDouglaid Constr. Co., Northside Dr. N. W., Atlanta, Ga. CA, $769,303. 7.655 mi. Madison Co. Grand total $2,874,407. CD 6/3, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

J. Kennon Perrin, West Broad St., Richmond, Va., LB, $893,336. KITCHEN-CAFETERIA BLDG., WILLIAMSBURG, VA. State Hospital Bd., 309 N. 12 St., Richmond, Va. Bids July 7. CD 6/9.

▲ Ivey Bros., 3224 Peachtree Rd. N. E., Atlanta, Ga. CA, $1,015,015, HOSPITAL, DALTON, GA. City and Whitfield Co., Dalton, Ga. Bids June 23. CD 7/6.

▲ A. B. Newton, Vidalia, Ga., LB, $1,252,978. SCHOOL projects, NEWNAN, GA. Coweta Co. Bd. Educ., Newnan, Ga. Bids June 24. CD 6/2.

▲ Cherokee Constr. Co., Cleveland, Tenn., LB, $1,035,000. SCHOOL PROJECTS, ROME, GA. Floyd Co. Bd. Educ., Rome, Ga. Bids July 8. CD 6/16.

▲ Herman Geller, 1299 N. E. 140 St., North Miami, Fla. Force Account. $1,000,000. 100 RESIDENCES, FORT LAUDERDALE, FLA.

▲ Hegeman Harris Co., Inc., 30 Rockefeller Plaza, New York, N. Y., CA, $2,600,000, HOTEL, FORT LAUDERDALE, FLA. Las Olas Inn., East Las Olas Blvd., Fort Lauderdale, Fla.

▲ Ruscon Constr. Co., P.O. Box 275, Charleston, S.C., LB, $1,257,205, Unit I, Main AGRICULTURE BLDG. University of Florida, GAINESVILLE, FLA. State Bd. Control, Educ. Bldg., Florida State University, Tallahassee, Fla. Bids June 15. CD 5/3.

Thompson-Polizzi Constr. Co., 298 Granello Ave., Coral Gables, Fla., CA $725,599, Northwest Dade Junior HIGH SCHOOL, MIAMI, FLA. Dade Co. Bd. P. Instruction, 275 N.W. 2 St., Miami, Fla. Bids June 23. CD 6/30, under LB.

▲ Feldman Building Corp., 605 Lincoln Rd., Miami Beach, Fla., CA Approx. $2,000,000. HOTEL, MIAMI BEACH, FLA. Major Corp. of Florida, 605 Lincoln Rd., Miami Beach, Fla.

Mills & Jones, Inc., 2260 4th Ave. S., St. Petersburg, Fla., LB $815,000. Mound Park HOSPITAL and NURSES HOME Addn., ST. PETERSBURG, FLA. City, City Hall, St. Petersburg, Fla. Bids July 1.

Bear Constr. Co., P.O. Box 694, Tallahassee, Fla., LB $879,600, men's GYMNASIUM, Florida State University, TALLAHASSEE, FLA. State Bd. Control Education Bldg., Tallahassee, Fla. Bids June 15. CD 5/3.

Gurtler, Herbert & Co., 1539 Pleasure St., New Orleans, La. CA Est. $850,000. 85 RESIDENCES, NEW ORLEANS, LA. Dave Walzinger, 357 Claiborne Towers, New Orleans, La.

▲ Catalyti Constr. Co., 1528 Walnut St., Phila., Pa. CA est. $5,000,000. design and construct 6,000 bbl. per day Houdriformer REFINERY unit, CATLETTSBURG, KY. Ashland Oil & Refining Co., 1409 Winchester Ave., Ashland, Ky.

▲ E. I. duPont de Nemours Co., duPont Bldg., Wilmington, Del. Force Account. $2,000,000. cellophane sect. addn. of PLANT, OLD HICKORY, TENN. CD 2/13/53.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 28 Michigan August 3 Wisconsin
STREETS AND ROADS
July 28 Michigan August 3 Wisconsin

BIDS ASKED—BUILDINGS

▲ Wis., Madison—SCHOOL—BA 8/2—Bd. Educ., 351 W. Wilson St., 2 story, 78,000 sq. ft. Crawford Heights School, $1,250,000. Siberz, Purcell & Cuthbert, 1920 Monroe St., archts. CD 4/13.

SOON LETS CONTRACT—BUILDINGS

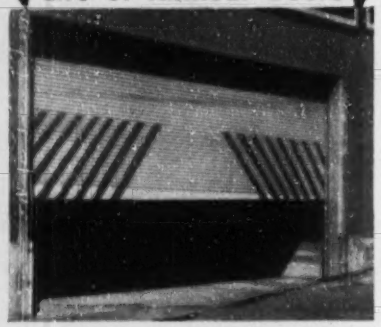
▲ Ill., Glenview—YOUTH CENTER, etc.—Our Lady of Perpetual Help Parish, 1766 Grove St., soon lets contract youth center, pool, school addn. $1,000,000. Pirola & Ehrbach, 221 N. La Salle St., Chicago, Zone 1, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—State Hy. Dpt., Columbus,
Hatcher Bros., Inc., 116 Schoolway, Mingo Junction, O. LB $139,368, est. $186,000, Type T-35 and structure 0.225 mi. SR 213-16.50, S-1118 (1), Jefferson Co.;

Double Protection
Heavy Galvanizing Plus Kinnear Paint Bond Adds To Amazing Long Life of Kinnear Doors



Kinnear Steel Rolling Doors are doubly protected against the elements —*before they receive prime and finish coats of paint in the field.* A heavy coating of 1.25 ounces of zinc per square foot (ASTM standards) provides lasting weather-resistance. And Kinnear's Paint Bond — a special phosphate treatment — assures *thorough* paint coverage. These rugged space-saving doors are a world-wide favorite for low-cost protection! Send for details.

The KINNEAR Manufacturing Company
1820-40 Fields Ave.
Columbus 16, Ohio
1742 Yosemite Ave.
San Francisco 24, Calif.

KINNEAR ROLLING DOORS
Saving Ways in Doorways

Steel Barges
Revolving Cranes
10 to 200 tons Capacity
Barge Mounted or on land
Stiff Leg and Guy Derricks
THE HAVRE DE GRACE SHIPYARD, INC.
Havre de Grace, Md.

CORE DRILLING
SERVICE AND SUPPLIES
TEST BORINGS FOR FOUNDATIONS
SOIL SAMPLING
GROUT HOLE DRILLING
A COMPLETE LINE OF DIAMOND CORE DRILLS, OPERATING EQUIPMENT AND DIAMOND BITS. SEND FOR BULLETIN 86 AND CATALOG 200.
E. J. **Longyear** CO.
MINNEAPOLIS
NEW YORK CITY SALT LAKE CITY

W. P. McCarren Co., Walhonding, O., LB **$144,216**, est. $163,000, Type T-32 on B-113, 3.288 mi. SR 229-0.00. 12.45, S-149 (4), Knox and Morrow Counties;
The A. Bentley & Sons Co., 201 Belmont Ave., Toledo, O., LB **$1,308,000**, est. $1,401,800, Type T-71 and structures 2.877 mi. SR 120-3.00, UI-1052 (10), (City of Toledo), Part No. 4—Toledo Expressway Sys., Front St. Interchange, Lucas Co.;
High Level Constr. Co., 2816 Euclid Ave., Cleveland, O., LB **$84,000**, est. $99,000, Type T-35 on B-119 and structure 0.454 mi. SR 534-(25.23-25.58), (Village of Geneva-on-the-Lake), Ashtabula Co.;
Edgar Spring, Inc., New Philadelphia, O., LB **$100,209**, est. $97,300, Type T-35, 7.04 mi. SR 9-(14.61-17.80) (Village of Carrollton), Carroll Co.;
Elmer Vogt, Inc., 859 Wellman Ave. S. E., Massillon, O., LB **$304,214**, est. $368,600, Type T-35 and structure 1.966 mi., SR 14-3.83. (7.838-7.92), Columbiana and Mahoning Counties;
The Horvitz Co., 913 Midland Bldg., Cleveland, O. LB **$478,057**, est. $500,000. Type T-35 and structure 1.855 mi. USR 42-2.66 (Village of Strongsville) Cuyahoga Co.;
Ruckman & Hansen, Inc., 3617 Leo Rd., Fort Wayne, Ind. LB **$154,307**, est. $164,700, Type T-35 and structure 0.525 mi. JSR 37-(22.96-23.35), Village of Sunbury, Delaware Co.;
Frantz Bros., Inc., 613 Highland Ave., Sidney, O., LB **$83,285**, est. $89,400, Type T-35 and structure 0.222 mi. SR 746-9.00, Marion Co.;
C. F. Replogle, Box 308, Circleville, O., LB **$193,601**, est. $220,800, Type T-35 and structure 0.314 mi. USR 22-(7.82-7.98), Village of Williamsport, Pickaway Co.;
Northwest Materials, Inc., W. Edgerton St., Bryan, O., LB **$464,011**, est. $482,500, Type T-35 and structure 4.172 mi. USR 20-(5.97-6.08), Williams Co.;
Mansfield Asphalt Paving Co., Rear 153 Orange St., Mansfield, O., LB **$133,429**, est. $129,750, Type B-35 and T-35, 18.49 mi. Ashland and Richland Counties;
Fuller-Davies Co., 1111 W. Court St., Cincinnati, O. LB **$59,990**, est. $66,500, Type T-35, 10.42 mi. Darke Co.; LB **$66,557**, est. $83,390, Type T-35 15.03 mi. Greene Co.;
A. J. Ronyak, Inc., Box 277, Burton, O., LB **$66,415**, est. $65,230, Type T-35, 11.08 mi. Geauga Co.;
Fenton Constr. Co., P. O. Box 310, Ashland, O., LB **$66,284**, est. $78,654, Type T-35, 12 mi. Hancock and Hardin Counties;
Arthur S. Langenderfer, Inc., 4690 W. Bancroft St., Toledo, O., LB **$71,078**, est. $79,980, Type T-35, 9.98 mi. Henry and Williams Counties;
The Ohio Engr. Co., 105 Sixth St., Lorain, O., LB **$72,288**, est. $74,100, Type T-30 and T-35 9.77 mi. Lorain Co.;
Ohio Road Improvement Co., 30 E. Broad St., Columbus, O., LB **$90,604**, est. $92,000, Type T-35 and T-35 modified 19.78 mi. Marion and Morrow Counties; LB **$75,289**, est. $84,700, Type T-30, T-35 11.1 mi. Medina and Wayne Counties; LB **$134,367**, est. $142,-050, Type T-35, 23.78 mi. Portage and Trumbull Counties;
S. E. Johnson Co., P. O. Box 29, Maumee, O., LB **$69,031**, est. $70,070, Type T-35, 9.3709 mi. Van Wert Co.;
Ohio Valley Paving Corp., 34 and Belmont Sts., Bellaire, O., LB **$82,998**, est. $90,688, Type T-30, T-31, 74.82 mi. Belmont, Harrison and Jefferson Counties; LB **$102,996**, est. $114,104, Type T-31, 105.2 mi. Carroll, Guernsey, Harrison, Jefferson and Tuscarawas Counties. Bids July 6. CD 6/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Raeburn Constr. Co.**, 4700 Colerain Ave., Cincinnati, O. Owner Builds. **$1,512,000**. 84 one story and 1½ story, brick, bsmnt. HOMES on new street of Compton Rd., CINCINNATI, O. James Wald & Assoc., 1721 Dalla St., Cincinnati, O. engrs. Awarded July 12.
▲ **Stieber Realty Co.**, 4650 Chene St., Detroit 7, Mich. Owner Builds. **$5,400,000**. 600 brick HOMES Huron Estates, Huron River Dr., Aspen Dr., FLAT ROCK, MICH.
▲ **Green & Sarko, Inc.**, 18107 James Couzens Dr., Detroit, Mich. Owner Builds. **$1,100,000**. 108 duplex HOMES, 53 single HOMES, brick, Granada Ave., Mt. Clemens St., and East Blvd., PONTIAC, MICH.
▲ **David Kay**, 10051 Southfield St., Detroit 28, Mich. CA Est. **$8,000,000**. 800 brick ranch HOUSES Brookdale, Masonic and Harper Sts., ST. CLAIR SHORES, MICH. Meadowbrook Realty Co., 10051 Southfield St., Detroit 28, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS

BRIDGES

July 27 Iowa
July 28 South Dakota
July 29 Missouri
July 30 Minnesota

STREETS AND ROADS

July 27 Iowa
July 28 South Dakota
July 29 Missouri
July 30 Kansas, Minnesota

BIDS ASKED—BUILDINGS

▲ **Tex., Austin**—POWER PLANT—BA 8/10—City, City Hall, Contr. 29, main power plant structure, $5,000,-000; Contr. 31, power plant piping, $375,000; Contr. 32, power plant wiring, $445,000. Plans deposit $225. Burns & McDonnell Engrg. Co., 95 and Troost Sts., Kansas City, Mo., archt. CD 2/10.
▲ **Tex., Harlingen** — HOSPITAL — BA 8/24 — Valley Baptist Hospital (Baptist General Convention of Texas) Baptist Bldg., Dallas, Valley Baptist Hospital and Sams Memorial Children's Center. $1,500,000. Cocke, Bowman & York, 1220 W. Harrison St., archts. CD 4/8, under LB.
▲ **Tex., Beaumont** — MOTEL — Bids Asked — Western Skies Motel, c/o Leon Green, 2806 Old Spanish Trail, Houston, 75-unit motel. $1,000,000. CD 7/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Luther Harper Constr. Co.**, Turley, Okla. CA Est. **$750,000**. 30 mi. natural gas line from Marion to Parkin;
Engineering Constr. Co., First National Bldg., Tulsa, Okla. CA Est. **$200,000**;
Pitts & Bryant Constr. Co., Little Rock, Ark. CA Est. **$1,000,000**. 60 mi. natural gas transmission from Marion to Earle;
R. C. Cudd Jr., Monroe, La. CA Est. **$100,000**. natural gas distr. sys., Earle;
Charles Mize, Russellville, Ark. CA Est. **$100,000**. natural gas line from Tyronza to Turnell, ARKANSAS. Mid-South Gas Co., 500 E. Third St., Little Rock, Ark. CD 10/11/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Fischer & Frichtel, Inc.**, 8703 St. Charles Rock Rd., St. Louis 21, Mo. Owner Builds. Est. **$4,000,000**. 415 addnl. RESIDENCES, incl. large shopping center to incl. supermarket and various smaller shops in Frostwood Subdivision on new area of 135 acres on south side of Frost Ave., BERKELEY (ST. LOUIS 21 P.O.), MO.
▲ **Fruin-Colnon Contg. Co.**, 1706 Olive St., St. Louis, Mo. CA Est. **$1,000,000**. 1 story, brick, steel, concrete, 85,928 ft. WAREHOUSE and trainshed, South Kingshighway Blvd., ST. LOUIS, MO. American Can Co., 100 Park Ave., New York, N. Y. CD 6/25.
H. E. Phelps, West Memphis, Ark. Force Account. **$900,000**. 90 RESIDENCES, WEST MEMPHIS, ARK.
▲† **C. L. Browning, Jr.**, Box 5008, Beacon Hill Station, San Antonio, Tex., LB **$6,810,817**, STORAGE PROJ., TEXAS. U. S. Eng., P. O. Box 1229, Galveston, Tex.
▲ **Rose Constr. Co.**, Box 814, Abilene, Tex., LB **$1,315,-416**, 8 story OFFICE and 2 story PARKING GARAGE, ABILENE, TEX. Citizens National Bank, N. 1st and Pine Sts., Abilene, Tex. Bids July 7. CD 6/15.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS

BRIDGES

August 4 California

STREETS AND ROADS

July 29 Washington

▲† **Wash., Bremerton**—DRYDOCK—BA 8/17—P. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, altering Drydock No. 5, NOY 84740. $1,100,-000. CD 4/10/52.

BIDS ASKED—BUILDINGS

Utah, Salt Lake City—HIGH SCHOOL—BA 8/3—Granite School Dist., 3212 S. State St., Junior High School. $850,000. Plans deposit $50. Lorenzo S. Young, 826 Continental Bank Bldg., archt. CD 4/1.
Utah, Salt Lake City—DORMITORY—BA 8/10—State Building Bd., 419 State Capitol, Salt Lake City, men's dormitory, at University of Utah. $900,000. Plans deposit $75. Slack W. Winburn, 618 Beason Bldg., archt. CD 7/26/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Gibbon & Reed**, 259 W. 3rd South St., Salt Lake City, Utah, CA **$1,209,074**. 240 mi. road and lanes, Dugway Proving Grounds, TOOELE, UTAH. U. S. Eng., 180 Montgomery St., San Francisco, Calif. Bids June 24. CD 7/8 under LB.
▲ **WASHINGTON**—State Hy. Comn., Olympia,
Northwest Constr. Co., 3950 6 Ave. N. W., Seattle, Wash., CA **$838,769**, surf .paving with Type I-1 b. conc, and c. conc. 6.259 mi. Primary State Hy. 1, Ridgefield Junction to Woodland, F.A.P Nc. BFI-001-1 (27), Clark and Cowlitz Counties;
Peter Kiewit Sons Co., Longview, Wash., CA **$276,696**, surf., constr. cement treated base and Type I-1 b. conc. paving 3.438 mi. Primary State Hy. 12, Coal Creek to Longview, FAP Nos. F-004-2 (8) and F-004-2 (9), Cowlitz Co.;
C. A. Power, E915 Marietta St., Spokane, Wash., CA **$231,938**, light bit. surf. 4.16 mi. Secondary State Hy. 3-H, Rockford to Freeman, Spokane Co.;
Pacific Sand & Gravel Co., Centralia, Wash., CA **$86,120**, surf. shoulders with light bit. surf. tr. 32.935 mi. Primary State Hy. 1, Chicken Coop Inn to Foster Creek and National Ave. to Borst Park, Cowlitz and Lewis Counties;
Erland & Bickle, 8265 N. Barthwick Ave., Portland, Ore., CA, **$78,952**, installing wire mesh slope mat on 0.139 mi. Primary State Hy. 8, Cape Horn vicinity, Skamania Co.;
Interstate Asphalt Co., Aberdeen, Wash., CA **$72,379**, plant mix surf. 5.9 mi. Neah Bay Rd., FAS No. S-0217 (7), Clallam Co. Grand total $1,584,854. Bids July 7, awarded July 8. OD 6/23 and 6/24.
▲ **CALIFORNIA** — State Div. Hys., P. Wks. Bldg., Sacramento,
A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif. LB **$1,821,227**. grade, pave, 4.7 mi., 6 rein.-con. bridges between Austin and Lathrop Rds., San Joaquin Co. Bids June 30. CD 6/10.
CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,
Fredericksen & Kasler, 212 13 St., Sacramento, Calif. LB **$817,627**. grade, surf. 7.6 mi. and 3 rein.-con.

bridges between Deer Creek and Linda Vista Ave., Tulare Co. Bids July 7. CD 6/16.

▲† Stolte, Inc., 8451 San Leandro St., Oakland, Calif., Gallagher & Burk, Inc., 344 High St., Oakland, Calif. and Lee Stephens, P. O. Box 316, French Camp, Calif. LB $1,663,806. earthwork, structures, relocation of State Hy. 6, Monticello Dam to Capell Valley, Monticello Reservoir, DC 4182, Yolo, Napa and Solano Counties, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Winters, Calif. Bids July 7. CD 5/28.

Stolte, Inc., P. O. Box 1470, Monterey, Calif. CA $875,791. sewage collection sys., Proj. 1, 1954, MORRO BAY, CALIF. Morro Bay Sanitary Dist., Morro Bay, Calif. Awarded July 8.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Howard S. Wright & Co., 414 Pontius St., Seattle, Wash., CA Approx. $1,250,000. 2 story, 190x200 ft., rein.-con. paper finishing room; box factory and third bldg. for PAPER PLANT, EVERETT, WASH. Everett Pulp & Paper Co., Everett, Wash.

▲ 20th Century Homes, 5119 N. 31 St., Tacoma, Wash. Day Labor. $1,000,000. 100 HOUSES, FERNDALE, WASH.

Ryness-Smith Co., 5801 E. Randolph St., Los Angeles, Calif. Owner Builds. $967,200. 104 frame, stucco DWELLINGS, Haback St., Arthurdale St., DOWNEY, CALIF.

▲ Robert E. McKee, Inc., 4700 San Fernando Rd., Los Angeles, Calif. LB $1,175,300. 5 story general CLASSROOM and OFFICE, LOS ANGELES, CALIF. University of California, 405 Hilgard Ave., Los Angeles, Calif. Bids July 8. CD 5/28.

▲ MacDonald, Young & Nelson, 351 California St., San Francisco, Calif. LB $1,117,000. OFFICE, SAN FRANCISCO, CALIF. Pacific Mutual Insurance Co., 660 Market St., San Francisco, Calif. Bids June 29. CD 6/11.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

August 19 Ontario

STREETS AND ROADS

August 12 Ontario

BIDS ASKED—BUILDINGS

▲ B. C. Burnaby—CHILD GUIDANCE CENTRE AND HOSPITAL—BA 7/29—B. C. Govt., Douglas Bldg., Victoria, 2 and 3 story, rein-con. child guidance center and day hospital. $1,000,000. Plans deposit $50. C. Campbell, Douglas Bldg., Victoria, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ QUEBEC—Province of Quebec, Dpt. P. Wks., Quebec City,

Own Forces. $1,000,000. bridge over Richelieu River between Fort Chambly and Richelieu, Fort Chambly. CD 12/27/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Fraser-Brace Engineering Co. Ltd., 360 St. James St. W., Montreal, Que. CA est. $1,500,000. 1 story, underground and 2 story above ground, 65x198 ft. steel frame RESEARCH LABORATORY, KINGSTON, ONT. DuPont of Canada Ltd., 1135 Beaver Hall Hill, Montreal, Que. Awarded July 9. CD 7/14.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† ALASKA—Alaska Road Comn., Dpt. Interior, Juneau, B-E-C-K Constructors, 3647 Stone Way, Seattle 3, Wash., and McLaughlin, Inc., P.O. Box 1824, Great Falls, Mont., CA $2,739,390, est. $2,460,000, conversion and constr. of bridges and grading 14. mi. Copper River Hy. Bids July 6. CD 7/9, under LB.

LATIN AMERICA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Hegeman Harris, 30 Rockefeller Plaza, New York 20, N. Y., U. S. A. CA $1,200,000. HOTEL, BAHAMA ISLANDS, B. W. I. Emerald Beach Club, Nassau, Bahama Islands, B. W. I. and c/o contractor.

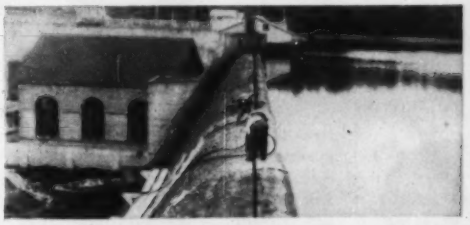
FOREIGN

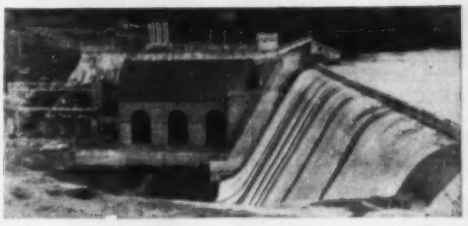
BIDS ASKED—HEAVY CONSTRUCTION

Iraq—BA 10/7—Directorate General of Contracts, Ministry of Development, Bagdad, highway bridge over the Tigris River at Mosul. Plans deposit $70. Plans may be inspected at the Embassy of Iraq, 2135 Wyoming Ave. N. W., Wash., D. C.

(Proposal Advertisements see pp. 66 to 68)

CEMENT GUN Co. RESTORES DAM with "GUNITE"





The photographs, at left, show a large Ambursen type dam in Northern New England which has been reintegrated with "GUNITE."

The top photograph shows the spalled and eroded condition of the concrete when the Cement Gun Company crews arrived on the job. The surface was chipped back to sound concrete and reinforcing mesh applied. Then the entire downstream surface was blanketed with "GUNITE."

The bottom photograph shows the completed "GUNITE" surfacing of the dam.

This is typical of many dams which we have restored throughout the country. Many similar examples of repair, remodeling and new construction with "GUNITE" are described and pictured in Bulletin A2400. A request on your letterhead will bring a free copy by return mail.

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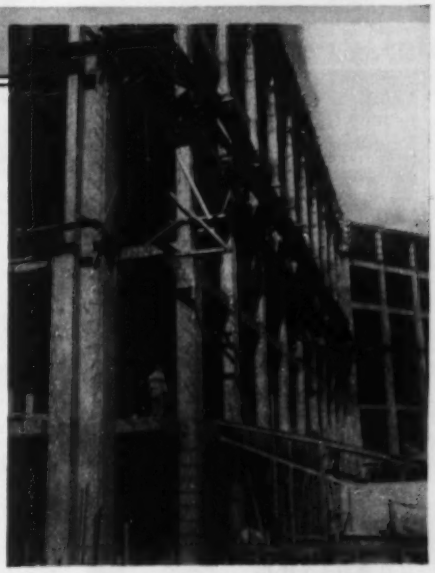
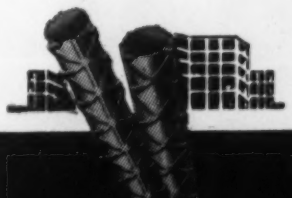


Alabama's new State Office Building where Connors Reinforcing Bars were used.



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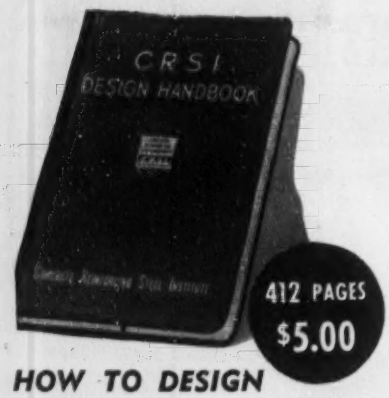

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UNIT PRICES

Combination bid gets two Kirwin Dam bridges, Kansas

Rentlor Co., Grand Island, Neb., linked their $69,045 low bid for a spillway-channel bridge to their $53,329 second-low on Bow Creek Crossing to win both. Rentlor's bid was 2% under second combined bid and 13% below the engineer's estimate. The jobs are part of the Kirwin, Kan., Dam and Reservoir of the Missouri River Basin project.

The spillway-channel crossing is an I-beam bridge with concrete slab floor, two 47-ft spans, four 56½-ft spans, concrete abutment single column piers supporting a cantilever cap, and 22-ft roadway. Bow Creek Crossing is an I-beam bridge with bearing piles driven into Carlile shale.

Wage rates in the Kirwin area include $2.00-$2.75 per hour for skilled, $1.50 for semi-skilled, $1.25 for common labor. Completion time is 240 calendar days for the spillway-channel bridge, 180 days for Bow Creek.

Bidders include:

Schedule No. 1—Spillway Channel Bridge

TC Rentlor Co., Inc., Grand Island, Neb.	$69,045
2 Korshoj Constr. Co., Inc., Blair, Neb.	70,067
14 Emerson S. Ellett Inc., Denver 2, Colo.	107,227
EE U. S. Bureau of Reclamation, Kirwin, Kan.	79,088

Bids: 3-25-54 Item	Unit	Quantity	Unit Prices 1 C	2
Excav, abutments	cy	300	$7.80	$2.00
piers	cy	220	8.76	10.00
Backfill	cy	280	0.64	3.50
Compact backfill	cy	180	3.82	1.00
Riprap	cy	70	10.78	6.00
Conc, abut & piers	cy	285	38.90	40.00
deck	cy	185	55.00	65.00
Reinf bars, f&p	lb	72,000	0.13	0.13
Cement, f & handle	bbl	730	5.83	5.50
Struct stl, f & erect	lb	160,000	0.16	0.17
Met br rail, f&p	lf	675	3.97	2.50

Schedule No. 2—Bow Creek Crossing

1 List & Clark Constr. Co., Kansas City 6, Mo.	$51,902
2C Rentlor Co., Inc., Grand Island, Neb.	53,329
14 Emerson S. Ellett Inc., Denver 2, Colo.	75,445
EE U. S. Bureau of Reclamation, Kirwin, Kan.	61,117

Bids: 3-25-54 Item	Unit	Quantity	Unit Prices 1	2 C
Excav, roadway	cy	47,900	$0.23	$0.19
pipe-arch culv	cy	20	3.00	3.30
Backfill	cy	110	0.50	0.76
Compact backfill	cy	110	3.00	3.90
Cr rock or grav, riprap	cy	200	6.00	11.00
Riprap	cy	800	7.00	9.45
Sand-grav road surf	cy	430	4.00	5.00
Furn & set guard posts	ea	70	8.00	6.50
F&p 72" x 44" CMP-arch culv, No. 10 ga	lf	52	29.00	33.20
F & drive steel piles	lf	820	5.50	5.60
Conc, abuts & bents	cy	45	60.00	55.00
deck	cy	90	60.00	55.00
Reinf bars, f&p	lb	22,000	0.14	0.13
Cement, f & handle	bbl	220	4.50	5.87
Struct steel, f & erect	lb	75,000	0.16	0.16
Met br rail, f&p	lf	335	3.50	4.15

Discount offer wins Tenn. sewer projects

In March, G. E. Moore Co. of Greenwood, S. C., won four sewer contracts from Clarksville, Tenn., although he was low bidder on two and second-low on two. His discount for receiving all four contracts, $4,750, enables him to be low bidder of 15 and 27% below the engineer's estimate. In May he was low bidder of eight, for a $238,587 contract at 3% above the engineer's estimate.

The nine miles of 8- to 15-in sanitary sewers must be completed within 400 calendar days.

The five contracts are combined below to show the different prices:

1C G. E. Moore Co., Inc., Greenwood, S. C.	$631,132
EE J. Stephen Watkins, Lexington, Ky.	766,266

Bids: 3-4-54 Item	Unit	Quantity	Unit Price
6" VCP house connect	lf	6,000-2,600	$1.35
		6,250-6,100	1.40
		15,000	1.50*
8" SS VCP at 0-6'	lf	16,100-9,100	1.53
		14,000	1.55
		24,500	1.65
		28,000	1.70*
6'-8'	lf	4,000-2,000	1.65
		4,600	1.67
		4,500	1.75
		8,000*	1.90*
8'-10'	lf	1,300-800	1.90
		4,000	2.25*-1.92
		1,500	1.95
8" ES VCP at 10'-12'	lf	600-400	3.15
		900	3.17
		250	3.20
		1,500	3.55*
12'-14'	lf	100	4.70
		300	4.77
		125	4.80
		1,000	5.20*
14'-16'	lf	200	7.00*
16'-18'	lf	300	10.75*
18'-20'	lf	50	16.00*
10" SS VCP at 0'-8'	lf	4,600	2.12
		2,200	2.58*
6'-8'	lf	800	2.30
		550	2.80*
8'-10'	lf	50	2.75
		400	3.38*
10" ES VCP at 10'-12'	lf	200	4.55*
12'-14'	lf	120	6.60*
16'-18'	lf	50	9.70
12" SS VCP at 0'-6'	lf	500	2.50
6'-8'	lf	550	2.70
8'-10'	lf	1,000	3.05
12" ES VCP at 10'-12'	lf	500	4.40
15" SS VCP at 0'-8'	lf	110	4.05
		200	5.50*
6'-8'	lf	25	4.65
		750	5.90*
8'-10'	lf	45	5.55
		50	6.55*
15" ES VCP at 10'-12'	lf	80	7.45
MH, standard	ea	95-110-150-61	
		190	158.50**
drop	ea	8-19-4-20	186.00**
shallow	ea	2-4-6-8	185.00**
barrel ext 6'-12'	lf	100-146-55-250	19.00**
12'-24'	lf	5-2-15	45.00**
Vit wyes, 8"x8"	ea	400-375-200-900	2.90**
10"x8"	ea	10	4.75*
12"x8"	ea	5	5.70
8"-1/8 bends	ea	320-300-110-750	1.50**
CIP mech jt frce mn 4"	lf	1,450	2.15
		1,250	2.25*
6"	lf	950	2.65
12"	lf	2,000	6.20
CIP, 8", on piers	lf	275-36	4.00
at 0'-6'	lf	500	4.25
		550	4.00*
6'-8'	lf	75	4.35*
10" on piers	lf	36	4.70
at 0'-6'	lf	250	4.70*
6'-8'	lf	40	5.10*
14" on piers	lf	195	8.40*
C1 "B" conc, piers	cy	25-10-5	60.00**
C1 "C" conc, crdle & enc	cy	15-30-10	35.00**
Sidewalk replacing	sy	350-25-100	3.00**
Cr stone, traf-bnd surf	ton	1,100-1,500-	
		1,300-600-3,000	2.65**
Pvmt repl, asph conc	ton	20-130-75-25	18.00**
cl "B" PCC	sy	175-50-250	
		100-20	6.50**
Bit surface trtment	sy	4,000-5,000-	
		2,500-12,000	0.85**
Rock exc, pipel trench	cy	750-1,250-1,300	12.00**
		1,250	11.00
10"CIP in 18" stl cov pipe under RR	ls	—	2,452*
Ejector sta #8	ls	—	10,750*
#13	ls	—	10,450*

Bid date 5-20-54
**Bid dates 3-24-54 and 5-20-54*

9:40 AM — A Caterpillar D-7 is ready for its daily grease job and maintenance check. Hoses reach from the Portable Service Station. Fresh, clean lubricant is applied with finger-tip control. Time: 12 minutes.

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Triangle Construction depends on Alemite "on-the-go" lubrication to protect vital rigs!

Faced with the problem of meeting almost impossible schedules on job after job involving heavy earthmoving equipment, the Triangle Construction Company of Kankakee, Illinois, consulted their Alemite suppliers, the General Equipment Company. On their recommendation this Alemite Portable Service Station was assembled.

Standard Alemite equipment was mounted on a 2½-ton truck. Thus, the service station went right to the equipment. Results were immediate and impressive! First saving was in time. Rigs paused only momentarily for service and routine maintenance, and time waste in going to and from the grease shop was completely eliminated.

Even more important was the saving in equipment downtime which became apparent with proper, regular lubrication-protection. There was less machine wear and maintenance costs dropped sharply.

Your Alemite representative can "tailor" a portable service station to exactly fit your needs. Show you how you too can save these three ways!

1. Save Time! By bringing complete power lubrication right to the equipment on the job – safely, efficiently!

2. Save Money! By cutting expensive lubrication downtime – increasing output of both men and machines!

3. Save Equipment! By greatly reducing the possibility of costly, time-consuming bearing failure and excessive wear!

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Heart of the Alemite Portable Service Station! Ample power with perfect control. With pump inserted in fresh drum, lubricant stays "refinery clean," completely protected from dust or other contamination from barrel to bearing!

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Mounted directly on the truck bed, these hose reels allow the operator 40′ of hose, provide positive delivery. No tension while applying lubrication, yet hose automatically retracts when finished. Keeps hose off the ground, out of the way. Manual models also available. Reels offer these 4 services:

1. Fast, easy greasing of track rolls, fittings.
2. Quick filling of gear housings, transmissions, final drives.
3. Delivers exact amount of crankcase oil needed—no waste.
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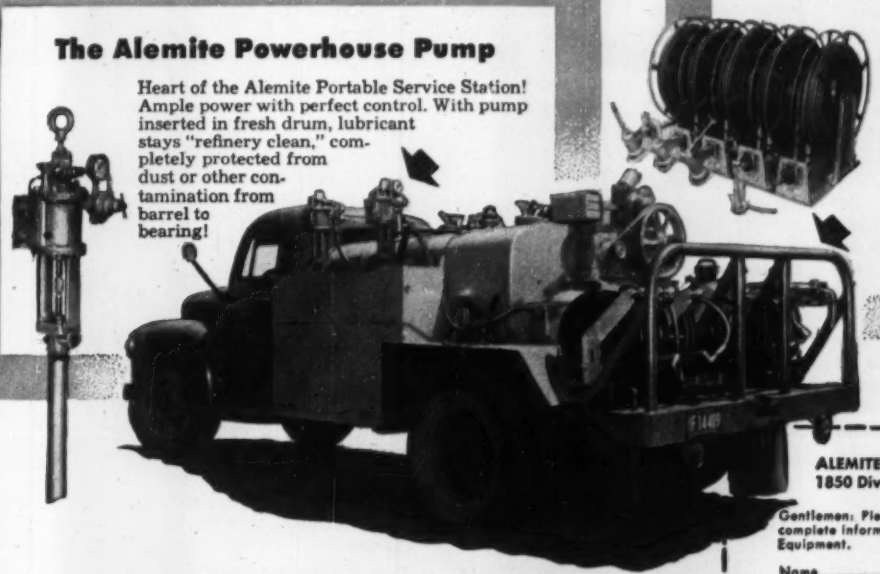

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Massachusetts considers lump-sum bidding for roads

Successful experience with lump-sum bids for bridge work may extend this bidding policy to highway contracts, too

After a year's successful experience with lump-sum bidding for bridge construction, the Massachusetts Department of Public Works is considering lump-sum bids instead of unit-price bids in future road construction.

A poll of state bridge engineers indicates that at present Massachusetts may be the only state that asks for lump-sum bids for bridges. Yet, the conditions that make this type of bidding attractive to Massachusetts also appear to be prevalent in most other states.

• **Less paper work**—When John A. Volpe took office as commissioner of the MDPW last year, one of the first policy changes he instituted was the taking of lump-sum bids for bridges. Having had a long and successful career as a building contractor, with satisfactory experience with this type of bidding, he believed it would be advantageous for bridges as well as buildings, particularly at a time of critical shortage of engineering personnel. (A consequence of unit-price bidding—which is the common practice—is that during construction more paper work is required than with lump-sum. Hence more state personnel are needed to keep accurate record of material quantities actually put in place.)

Under the Massachusetts procedure, bid calls state that a lump-sum price is to be submitted for all work on the proposed bridge structure, including approach slabs and wingwalls, provisions for pedestrian travel and the installation of sheet piling when required. Bearing piles, excavation and riprap, however, are not included. For these and other foundation items that may have to be varied to suit conditions during construction, the state stipulates a unit price that will be applied as an increase or a deduction.

As a basis for partial payments only, the contractor submits a quantity and unit-price breakdown of the lump-sum price.

• **Prices close to estimates**—Since last May, lump-sum bids have been received for about 80 bridges. In general, the total price bid for each project agrees closely with the engineering unit-price estimate. In contrast, the breakdowns frequently differ, but since only partial payments are affected, the MDPW has accepted the differentials.

• **Contractors' objections**—Though the state is well pleased with the new policy, it has run into three principal objections from contractors:

• Since, in taking off quantities from the plans, different contractors may obtain different figures, MDPW should furnish a table of estimated quantities, to be used only as a basis for partial payments.

• Lump-sum bids cannot be obtained for structural steel subcontractors.

• Fixed unit prices for the addition or reduction of substructure quantities are unfair, and these prices should be bid items.

• **MDPW's viewpoint**—MDPW has taken the stand that the contractor should be responsible for his own quantities. Otherwise, he might hold the department responsible for furnished quantities if they are in error.

Investigating the availability of lump-sum prices for structural steel, the MDPW got in touch with four steel firms that do the greatest percentage of work in the state. These companies say they had never refused to quote on a lump-sum basis.

Finally, the MDPW decided that unit-price bids for variations in foundation work are inadvisable, since it would be impossible to take these items into account in determining the low bid.

Experience so far with lump-sum bidding has convinced MDPW that it is a sensible method. While it does not reduce the amount of engineering time in preliminary stages, it does cut down considerably the time in the field in figuring quantities for partial payments, reduces to a minimum arguments between contractors and engineers as to the exact amount of quantities involved, and decreases the time between completion of work and payment to contractors. A disadvantage is that unit prices will not be available for future estimating, because breakdown figures are not true prices.

Several states—Connecticut, Minnesota, New Hampshire and Wisconsin—report they had tried lump-sum bidding twenty or more years ago but abandoned it because of unsatisfactory experience. Some states find that contractors prefer unit-price bidding with more items than specified at present, rather than lump-sum. However, because of the shortage of engineers, at least a half-dozen states now are considering lump-sum bidding for bridges.

Computer for hire

Now you can get problems solved on a rental basis

Analog computer service on a rental basis now is being offered by Electronic Associates, Inc., at a "computation center" opened last week near Princeton, N. J. Besides supplying the computer, the center will provide a staff of experts for problem analysis.

The analog computer can be used for fast, economical analysis and solution of complex problems in engineering research and design. It will simulate physical laws with continually varying complex quantities. For instance, it is now possible to design and analyze operation of complex equipment by computer, before the equipment itself is even laid out on drawing boards or constructed.

• **Electrical analog**—As its name implies, an analog computer sets up an electrical analogy to physical relationships. It is distinguished from a digital computer, which works on a different principle. The decision as to which type to use for a problem depends on the time available and the cost.

Electronic Associates, Inc., was founded in 1945 by a group of former Signal Corps specialists. It has grown into a fairly sizeable electronic research and development laboratory, located at Long Branch, N. J.

Here's how the new computation center will handle problems:

Specialists assigned to the problem will formulate a statement of the problem, then work out descriptive mathematical equations. Then electrical equivalents are assigned to the quantities in the equations. The problem is then prepared for insertion into the computers by making the proper interconnections on a removable panel. Finally, the problem is fed into the computer and the result received.

Architect* new business in 1953—by size of firm and type of work

Type of Work	1—$1,000,000 or more			2—$500,000-$1,000,000			3—$100,000-$500,000			All architects		
	Number of . . . architects	projects	$ volume (millions)	Number of . . . architects	projects	$ volume (millions)	Number of . . . architects	projects	$ volume (millions)	Number of . . . architects	projects	$ volume (millions)
Heavy construction												
Waterworks	5	4	$0.7	0	0	$0.0	1	1	$0.2	6	5	$0.9
Sewerage	4	3	2.1	0	0	0.0	1	1	0.3	5	4	2.4
Bridges	3	2	0.2	1	1	0.1	0	0	0.0	4	3	0.3
Highways	3	2	0.3	2	2	0.1	0	0	0.0	5	4	0.4
Earthwork, waterways	3	3	0.4	0	0	0.0	1	1	0.0†	4	4	0.4
Airports	42	63	89.0	11	13	5.6	8	8	1.7	61	84	96.3
Unclassified	109	138	56.9	38	45	9.5	58	65	11.2	205	248	77.6
Total	. . . .	215	149.6	. . .	61	15.3	. . . .	76	13.4	. . . .	352	178.3
Buildings												
Industrial	321	517	248.4	127	165	50.1	275	320	52.2	723	1002	350.7
Mass housing, commercial and public buildings	1336	4716	5615.9	641	915	406.3	747	749	248.2	2724	6380	6270.4
Total	. . . .	5233	5864.3	. . .	1080	456.4	. . . .	1069	300.4	. . . .	7382	6621.1
Federal (incl. in above)	61	74	171.6	19	22	10.6	15	12	2.9	95	108	185.1
All construction	**1396**	**5448**	**6013.9**	**706**	**1141**	**471.7**	**1032**	**1145**	**313.8**	**3134**	**7734**	**6799.4**

* Not including architect-engineers who will be reported separately. † Less than $0.05 million.

Architects' new business kept rolling in 1953

There were 3,134 architectural firms last year which took on $100,000 or more of new business, according to ENR's annual survey. They signed up 7,734 projects with a total value of almost $6.8 billion.

As might be expected, nearly all of these projects were in the building field. The only types of nonbuilding work where architects did any volume of business were airports and unclassified work. There were about a thousand industrial building projects, involving a total volume of about $351 million. The rest were in the broad category of mass housing, commercial and public buildings.

Architectural firms in the $1-million-plus bracket outnumbered firms in either of the other brackets, and handled the bulk of new business. The average big firm took on about four projects, and their projects averaged about $1.1 million in volume. In the $500,000-$1,000,000 bracket, the average firm took on 1.6 new projects, each averaging about $410,000. In the $100,000-$500,000 category, each firm averaged 1.1 new projects at about $270,000 per project.

The firms in this survey took on only 108 federal projects in 1953, with a total volume of $185 million. Most of these were signed up by the large architectural firms.

This is the first time ENR has excluded architect-engineers from its annual survey of new business of architectural firms, so figures are not comparable with previous years. New 1953 business of consulting engineers has been tabulated (ENR July 15, p. 80). A separate analysis of new business taken on by architect-engineers will follow.

PRETENSIONING BENCH—A Freyssinet-designed setup turns out members.

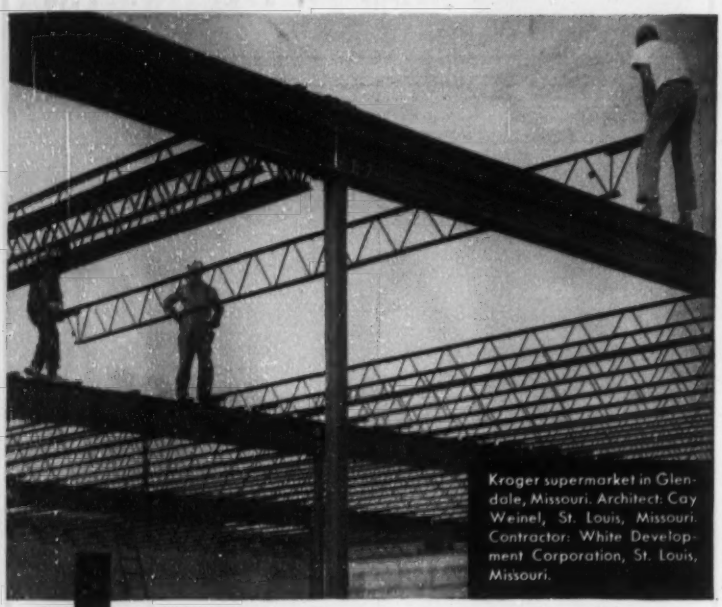
Licensed concrete

A consulting firm sells know-how on a new basis

The fast development of prestressed concrete has taken an unexpected turn. One of the leading consultants in the field has gone into the business of advising firms going into factory fabrication of pretensioned members, and is licensing the use of special equipment for making these items.

Freyssinet Co., Inc., of New York City, has designed a prestressing bench (picture, left) that will turn out a variety of pretensioned concrete sections. It will license fabricators to set up prestressing yards using this design. Design for a single bench will cost the fabricator somewhere around $2,000, while overall cost of setting up an entire yard will run from about $25,000 to $100,000, depending on

(*Continued on page 64*)



Kroger supermarket in Glendale, Missouri. Architect: Cay Weinel, St. Louis, Missouri. Contractor: White Development Corporation, St. Louis, Missouri.

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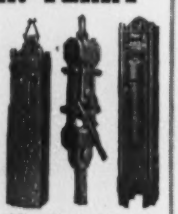

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number of benches, cranes, buckets, and auxiliary equipment.

In addition to its design fee, Freyssinet gets a service fee. This varies, but often runs about 2% of the selling price of the product. Since many of the licensees are new firms, without much working capital, this method offers low initial cost and the opportunity to pay off in stages.

• **What starts it**—R. M. Dubois, Freyssinet president, says that licensing arrangements are generally brought about by a specific pretensioning job which will write off all or a substantial part of the total cost of building the yard.

As part of the deal, Freyssinet asks its licensees to refer to themselves as "Freyssinet affiliates," and keeps them up to date on the latest advances in prestressed work out of its U. S. experience and from 30-odd affiliates around the world. It also will supply consulting engineers on an hourly basis as jobs develop.

The firm gives its licensees exclusive rights for a definite trading area. For example, its New York City licensee has exclusive rights for the five city boroughs and Nassau County. Of course, this is no guarantee against bid competition from a licensee in another area, but it does give some protection.

Freyssinet now has over 10 licensees, and a number in prospect. Among its clients are Precrete Inc., New York; Lewis Manufacturing Co., Miami; Pacific Prestressed Corp., San Francisco; Formigli Architectural Stone Co., Philadelphia; and Precast Concrete, Ltd., of Calgary, Canada.

Canadian builders form construction combine

Six of Canada's biggest construction firms have joined forces to become "Iroquois Constructors, Ltd.," with the aim of obtaining major contracts on the St. Lawrence Seaway and power developments that eventually will grow from it.

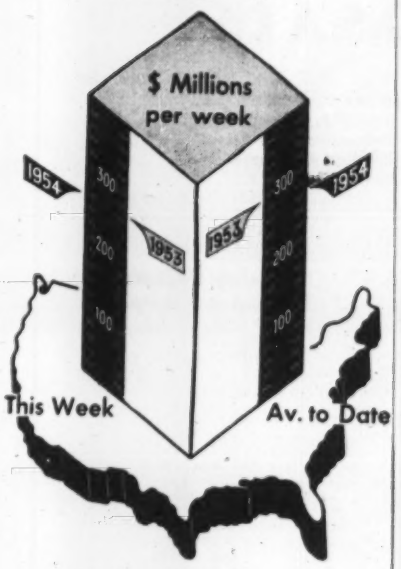
The companies—all major, all-Canadian organizations—are: Angus Robertson, Ltd., Montreal; Canadian Comstock Co., Ltd., Toronto; Foundation Co. of Canada, Ltd., Montreal; Rayner and Armstrong Ltd., Toronto; and Rayner Construction, Ltd., Toronto.

Each of the firms has specialized in large-scale heavy construction.

The new organization will have its general offices at 1290 Bay Street, Toronto.

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 29 wks 1954	1953	% chge
Federal	$12.8	$722.2	$917.4	−21
State and municipal	110.3	2,672.4	2,769.9	−4
Total public	123.1	3,394.6	3,687.3	−8
Total private	136.2	4,421.8	4,930.4	−10
U. S. total	$259.3	$7,816.4	$8,617.7	−9

Contracts by type of work

Waterworks	$2.4	$125.0	$134.4	−7
Sewerage	5.9	237.7	219.2	−3
Bridges	17.3	256.9	345.0	−26
Highways	45.4	983.4	1,007.6	−2
Earthwork, Waterways	1.5	161.8	238.6	−32
Buildings:				
Public, excl. hsg.	25.7	1,003.8	972.9	+3
Housing, pub.	3.4	139.1	281.7	−51
Housing, priv.	80.6	2,448.2	2,197.9	+11
Commercial	12.2	710.9	635.7	+12
Industrial	34.8	1,038.9	1,528.6	−32
Unclassified	20.1	734.7	1,056.1	−30
Total	259.3	$7,816.4	$8,617.7	−9

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

(Millions of dollars)

	Week of July 15 1954	Cumulative 28 Weeks 1954	1953	% chge 1953-54
Corporate securities	$55.1	$1,691.8		−32
State and municipal:				
Excluding housing	50.8	3,230.5		+45
Housing	2.3	69.7		−67
Federal loans	3.5	73.8		+10
Federal aid	...	55.0		...
Total non-federal	$111.7	$5,120.8		+2
Federal approps.:				
In U. S.	...	56.0		...
Outside U. S.	...	4.6		...
Total new capital	$111.7	$5,181.4		+4

ENR Indexes

		Base years = 100 1913	1926	1949
Constr. cost	7/15	644.06	309.60	135.02
		644.60	309.86	135.13
Bldg. cost	7/15	457.59	247.40	130.08
	7/8	458.13	247.69	130.23
Volume	June	510	207	147
	May	648	263	187

For additional cost index data, see Construction Daily

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OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $1.80 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: August 6, 1954

Construction Work

NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of Cofferdams A and B, unwatering Cofferdam area, construction of bridge, and incidental work for Long Sault Dam, near Massena, St. Lawrence County, New York, until 10:30 A.M. Eastern Standard Time on the 6th day of August, 1954 at the Authority's Office, 270 Broadway, Room 1207A, New York 7, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items of work are:

SCHEDULE NO. 1

Estimated: 1,000,000 cu yds	Excavation (Various Classes)
260 cu yds	Concrete
20,000 lbs	Reinforcement Steel in Structure
100 tons	Structural Steel
55 Mfbm	Timber in Structure
114,000 cu yds	Earthfill in embankment
275,000 cu yds	Rockfill and Riprap
6,350 ac.-ft	Unwatering

AND

SCHEDULE NO. 2—ALTERNATE I

3,750 Mfbm	Timber Crib Cofferdam
1,030 tons	Steel Sheet Piling
76,000 cu yds	Rockfill in Cribs

OR

SCHEDULE NO. 3—ALTERNATE II

4,050 tons	Steel Sheet Piling
110,000 cu yds	Cell Fill, Earth

Plans, specifications and Proposal Forms for the work are on file in the Authority's Office and in the offices of the Engineers, Sanderson & Porter and Uhl, Hall & Rich, 52 Broadway, New York 4, New York and 230 Congress Street, Boston 10, Massachusetts; The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications and proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and payment of a fee of Fifty ($50.00) dollars, no part of which will be refunded.

Bids must be made upon the proposal forms included in the Contract Documents. Each proposal must be accompanied by draft or certified check payable to the order of The Power Authority of the State of New York for the Sum of $100,000.00.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: August 24, 1954

New Jersey Turnpike Authority

CONTRACT NO. N-5

Proposals are invited for Contract No. N-5 which involves the reconstruction of the Newark Airport Interchange of the New Jersey Turnpike, in the city of Newark, Essex County, including grading, drainage, paving, bridge substructure units, concrete deck on bridge superstructure, retaining walls and other incidental work, all in connection with the construction of the Newark Bay—Hudson County Extension in the New Jersey Turnpike.

The principal items of work include:

Roadway Excavation, Earth	120,000 Cu. Yds.
Roadway Excavation, Muck	90,000 Cu. Yds.
Borrow Excavation	500,000 Cu. Yds.
Storm Drains, Reinforced—Concrete Pipe	12,000 Lin. Ft.
Manholes and Drop Inlets	143
Asphaltic Concrete Pavement	65,500 Sq. Yds.
Portland Cement Concrete Pavement	4,800 Sq. Yds
Bridge Approach Slabs	1,900 Sq. Yds.
Timber Piles	5,000 Lin. Ft.
Steel H. Piles	4,600 Lin. Ft.
Class B Concrete	1,020 Cu. Yds.
Reinforcement Steel	101,000 Lbs.
Concrete Curb	30,000 Lin. Ft.
Guard Rail	12,000 Lin. Ft.
4-Inch Topsoiling	120,000 Sq. Yds.

Proposals will be received at the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, until 11:00 o'clock Eastern Daylight Saving Time on the morning of August 24th, 1954, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after July 27th, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

July 22, 1954

Bids: August 3, 1954

Paving Repairs
La Guardia Airport

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M 255
PROPOSAL No. 468

Sealed proposals for furnishing all labor, material and equipment necessary for paving repairs at La Guardia Airport, Queens, N. Y., will be received at the office of the Purchase and Administrative Services Department, The Port of New York Authority, Room 900, 111 8th Ave., New York 11, until 11:00 A.M. (D.S.T.) Tuesday, August 3, 1954, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Purchase and Administrative Services Department, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to the Treasury Department, Room 719, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Purchase and Administrative Services Department, Room 900, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Culman, Chairman

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4187) will be received at Superior, Nebraska, until August 25, 1954, for furnishing labor and materials for earthwork and structures, Franklin Canal, Station 1454+00 to Station 2178+20, and Drains, Bostwick Division, Nebraska-Kansas, Missouri River Basin Project. Location near Red Cloud, Nebraska. Principal items are 808,000 cu. yds. excavation; 1,160 cu. yds. concrete in structures; 23,700 lin. ft. concrete pipe, up to 72-inch; 22,200 pounds furnishing and installing metalwork; and other work. Completion time 600 days. For particulars, address Bureau of Reclamation, Superior, Nebraska; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Sealed bids in triplicated for construction of the Law School Building, Howard University, Washington, D. C., will be received until 2:00 P.M. EDT on August 12, 1954 in Rm. 7100 Regional Office Bldg., 7th & D Sts. S. W., Washington, D. C., and then publicly opened in Rm. 7100. Bidding material may be obtained from General Services Administration, Public Buildings Service, Rm. 1304 General Service Bldg., 19th & F Sts., N. W., Washington, D. C. Executive 3-4900, Br. 2397.

INSURE COMPETITION

and get the lowest possible bid for your proposed work by placing your bids wanted advertising in this Section.

Don't limit competition to local bidding alone. Bring it to the attention of contractors the country over. They read this Section every week—make sure your bid is here where they can read it.

OFFICIAL PROPOSALS

Bids: August 23, 1954

Notice to Bidders

Additions and Alterations to Sewage Treatment Works Town of Morristown, New Jersey

Sealed proposals for furnishing all materials and doing all work required for the construction of Additions and Alterations to the Sewage Treatment Works of Morristown, N. J. will be received by the Mayor and Board of Aldermen at its meeting to be held at the Town Hall at: 8:15 P.M. D.S.T. on the 23rd day of August, 1954 at which time and place they will be publicly opened and read.

The work includes the construction of a New Grit Chamber, Comminutor and Preliminary Sedimentation Tanks, New Final Sedimentation Tank, New Sludge Digestion Tanks and miscellaneous items.

The work is divided into five contracts:
Contract A—General Construction
Contract B—Repairs to Existing Concrete
Contract C—Plumbing Work
Contract D—Iron and Steel Work
Contract E—Electrical Work

Copies of the plans and specifications and Contract Documents may be seen at the office of the Town Clerk at the Town Hall, Morristown, New Jersey or at the office of Clyde Potts Associates, 30 Church Street, New York City. Plans and specifications may be loaned to prospective bidders upon the deposit of $25.00, which sum will be refunded to each bidder who submits a bid if the documents so obtained by him are returned undamaged within 30 days after the date of receipt of bids. The deposit will not be refunded to anyone who takes out such documents and does not bid on either of the contracts. Each bid must be accompanied by a certified check on a solvent bank to the order of the Town of Morristown in the amount of 10% of the amount of the bid, such certification to be without condition and/or qualification. Such certified checks will be returned to the unsuccessful bidders upon the award of the contracts to the successful bidders.

The Mayor and Board of Alderman reserve the right to reject any and all proposals and to waive any informality in the proposals received and to accept any proposal which they deem to be most favorable to the interest of the Town.

Dated July 12, 1954

NELSON BUTERA
Town Clerk

U. S. Government

GOV. OF DIST. OF COL., DIR. OF HIGHWAYS, D. C., July 14, 1954. SEALED PROPOSALS will be recd. in Rm. 404, 499 Pa. Ave. N.W., Wash. 1, D. C., until 2 PM, DST, Aug. 11, 1954, and then publicly opened and read for GRADING, DRAINAGE, STRUCTURES, PAVING AND TRUNK SEWER, 35TH ST. to STODDERT PL. ON E. CAP. ST. EXTENSION, CONTRACT NO. 5, Federal Aid F-42 (8) consist. of 213,000 cu. yds. excavation, 6,100 lin. ft. stormsewers, 3,700 lin. ft. sanitary sewers, 5,545 lin. ft. conc. curb, 2,190 lin. ft. conc. curb and gutter, 14,100 sq. yds. 8" reinf. conc. pavement, 11,625 cu. yds. conc. in bridge structures, 6,980 cu. yds. conc. in trunk sewer, 315,000 lbs. struct. steel, 3,000 lin. ft. handrail, and 2,250,000 lbs. reinforc. steel. Proposal forms, specns. and plans obtainable, upon deposit of a Certified Check for each set in the amount of $50.00, payable to Collector of Taxes, D. C., from Supervisor, Contr. & Bond Sec., Procurement Office, D. C., Rm. 406, 499 Pa. Ave., N.W. (Tel. NA 8-6000, Ext. 2378).

Bids: August 24, 1954

New Jersey Turnpike Authority

CONTRACTS NO'S. GR-6A, GR-6B, GR-6C, GR-6D, GR-6E AND GR-6F

Sealed proposals are invited for Contracts No's. GR-6A, GR-6B, GR-6C, GR-6D, GR-6E and GR-6F in connection with the additions and alterations to the service buildings at Service Area 12-S on the New Jersey Turnpike, in Hudson County, as follows:
Contract No. GR-6A—General Construction
Contract No. GR-6B—Structural Steel and Miscellaneous Metal Work
Contract No. GR-6C—Heating, Ventilation and Refrigeration
Contract No. GR-6D—Plumbing and Drainage
Contract No. GR-6E—Electrical Work
Contract No. GR-6F—Concession Equipment

Proposals will be received at the office of the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, until 11:00 o'Clock, Eastern Daylight Saving Time, on the morning of August 24, 1954, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after July 27th, 1954 at the office of the Authority and at the office of the Consulting Engineers, Fellheimer & Wagner, 155 East 42nd Street, New York 17, New York. Contract documents will be furnished upon payment of ten dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
July 22, 1954 Paul L. Troast, Chairman

U. S. Government

Department of Commerce, Bureau of Public Roads, July 12, 1954. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 11:00 a.m., C.S.T., AUGUST 17, 1954, for the construction of Project 3HI, Part A, Natchez Trace Parkway, Webster and Choctaw Counties, Mississippi. 6.191 miles Grading, Draining, Gravel Base Course and other work from near U. S. Route 82 southeasterly. The approximate quantities of the more important items are as follows: 344,000 cu. yd. Excavation, 380,000 cu. yd. Borrow, 40,000 tons Gravel, and 950 cu. yd. Cement Concrete. Minimum wage rates have been fixed as required by law. Plans, Specifications, and Proposal Forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. H. J. Spelman, Division Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4209) will be received at Denver, Colorado, until August 19, 1954, for furnishing three (3) 33.33-foot by 39.51-foot radial gates for Webster Dam, Solomon Division, Webster Unit, Kansas, Missouri River Basin Project. Delivery is desired within 300 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Bids: July 29, 1954

Contract No. 224 Additions to Kennebunk Concessions

MAINE TURNPIKE AUTHORITY
MAINE TURNPIKE
Section 2—Portland to Augusta
(Augusta Extension)

Sealed Proposals will be received by the Maine Turnpike Authority for:

CONTRACT No. 224

Additions to Kennebunk Concessions at the offices of the Authority, 17 Bishop Street, Portland, Maine until 10:00 A.M., Eastern Standard Time, on July 29, 1954 at which time and place the Proposals will be publicly opened and read.

The work included under this Contract consists generally of the construction of an addition to the existing service building and an addition to the existing restaurant building, at the service areas at Mile 23 of the Maine Turnpike, near the Town of Kennebunk, Maine, together with the plumbing, heating, and electrical installations and miscellaneous construction in connection therewith or incidental thereto. Bids will be submitted in a lump sum price for all of the work contemplated.

Contract documents may be examined by prospective bidders during regular office hours at the offices of the Authority at the above address and at the offices of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y., and may be obtained from the Authority, 17 Bishop Street, Portland, Maine, upon payment of Ten Dollars ($10.00) for each set. Contract documents need not be returned and the payment will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be accompanied by a certified or cashier's check payable to the Maine Turnpike Authority in an amount not less than five per cent (5%) of the Total Amount in the Proposal but not less than $500.00 nor more than $200,000.00.

Proposals must be made upon the Proposal forms furnished separately by the Authority with the contract documents and must be enclosed in the sealed special addressed envelopes provided therefor bearing the name and address of the bidder and the number of the contract on the outside.

Before the award of the Contract, any bidder may be required to show that he has the necessary facilities, experience, ability and financial resources to perform the work within the time required and to the satisfaction of th Authority.

The bidder, to whom a Contract is awarded, will be required to furnish a Surety Corporation Bond, satisfactory to the Authority, on the standard Contract Bond form of the Authority, for a sum not less than the Total Amount of the Proposal.

The Authority reserves the unqualified right to reject all Proposals or to accept that Proposal which in its sole judgment will under all circumstances serve its best interests. The Contract will be awarded or Proposals rejected within thirty days after the opening of Proposals, except that in the event of default by a successful bidder the Authority reserves the right to accept the Proposal of any other bidder within twenty days after such default.

MAINE TURNPIKE AUTHORITY
Paul C. Thurston, Chairman

Portland, Maine
July 9, 1954

Read the Official Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

Bids: July 29, 1954

Contract No. 220
Augusta Interchange

MAINE TURNPIKE AUTHORITY
MAINE TURNPIKE
Section 2—Portland to Augusta
(Augusta Extension)

Sealed Proposals will be received by the Maine Turnpike Authority for:

CONTRACT No. 220
AUGUSTA INTERCHANGE

at the offices of the Authority, 17 Bishop Street, Portland, Maine until 10:00 A.M., Eastern Standard Time on July 29, 1954 at which time and place the Proposals will be publicly opened and read.

The work under this Contract includes clearing, grading, drainage, bridge construction, paving and miscellaneous construction required to complete the northern terminus of the Augusta Extension, including the Augusta Interchange and the reconstruction of a section of Route 202 (Western Avenue).

The principal items of work will include:

GRADING AND DRAINAGE	
Clearing, Acres	5
Excavation, Earth—Cu. Yds.	69,589
Excavation, Rock—Cu. Yds.	6,145
Borrow, Cu. Yds.	191,494
Manholes, Inlets & Catch Basins	29
Pipe, Linear Ft.	5,483
Concrete in Culverts, Cu. Yds.	15
BRIDGES	
Structural Excavation—Earth, for Bridges, Cu. Yds.	1,755
Structural Excavation—Rock, for Bridges, Cu. Yds.	121
Reinforcing Steel Bars for Bridges, Pounds	322,695
Concrete in Piers and Abutments, Cu. Yds.	1,297
Concrete in Superstructures, Cu. Yds.	876
Driving Steel H-Piles, Linear Ft.	600
Erection of Steel Structures, Pounds	883,195
Metal Handrail on Concrete Parapets, Linear Ft.	892
PAVING	
Reshaping and Compacting Gravel Base Course, Sq. Yds.	61,517
Aggregate for Bituminous Macadam Base Course, Tons	6,110
Asphalt Cement, Gallons	64,597
Bituminous Concrete Mixture, Tons	6,786
Aggregate for Bituminous Macadam Shoulders, Tons	2,402
Emulsified Asphalt, Gallons	38,633
Curbs, Walks and Dividers, Linear Ft.	4,280
Steel Beam Guard Rail, Linear Ft.	5,480
Wire Cable Guard Rail, Linear Ft.	1,860
Topsoil and Seeding, Sq. Yds.	56,112
Sodding, Sq. Yds.	300

Contract documents may be examined by prospective bidders during regular office hours at the offices of the Authority and at the offices of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York 5, N. Y. The contract documents may be obtained from the Authority, 17 Bishop St., Portland, Maine, upon payment of Thirty-Five ($35.00) Dollars for each set, which will not be refunded. Bound sets of Cross-Sections will be furnished for an additional payment of Ten Dollars ($10.00) per set, not returnable. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be accompanied by a certified or cashier's check payable to the Maine Turnpike Authority in an amount not less than five per cent (5%) of the Total Amount in the Proposal but not less than $500.00 nor more than $200,000.00.

Proposals must be made upon the Proposal forms furnished separately by the Authority, with the contract documents and must be enclosed in the sealed special addressed envelopes provided therefor bearing the name and address of the bidder and the number of the Contract on the outside.

Before the award of the Contract, any bidder may be required to show that he has the necessary facilities, experience, ability and financial resources to perform the work within the time required and to the satisfaction of the Authority.

The Bidder, to whom a Contract is awarded, will be required to furnish a Surety Corporation Bond, satisfactory to the Authority, on the standard Contract Bond form of the Authority, for a sum not less than the Total Amount of the Proposal.

The Authority reserves the unqualified right to reject all Proposals or to accept that Proposal which in its sole judgment will under all circumstances serve its best interests. The Contract will be awarded or Proposals rejected within thirty days after the date of opening Proposals, except that in the event of a default by a successful bidder the Authority reserves the right to accept the Proposal of any other bidder within twenty days after such default.

MAINE TURNPIKE AUTHORITY
Paul C. Thurston, Chairman

Portland, Maine
July 9, 1954

Bids: August 4, 1954

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 4th day of August 1954, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract:

For the construction of structures and the grading, drainage and paving of the Turnpike Section 35-B, part of the Northeastern Extension of the Pennsylvania Turnpike in Plymouth, Whitpain and Worcester Townships, Montgomery County, Commonwealth of Pennsylvania, this section being situated as follows:

Beginning at a point approximately 1,854 feet southeast of the centerline of L. R. 46143 at Turnpike station 54+50 in Plymouth Township, Montgomery County; thence in a northwesterly direction 22,649 feet to Turnpike station 281+00, at a point approximately 392 feet northwest of the centerline of Legislative Route 197, T. R. 73 in Worcester Township, Montgomery County, a distance of approximately 4.29 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation	890,655 Cu. Yds.
Class II Excavation	15,836 Cu. Yds.
Class II A Excavation	6,816 Cu. Yds.
Special Subgrade	182,420 Sq. Yds.
Reinforced Concrete Pavement	116,778 Sq. Yds.
Class A Concrete	4,576 Cu. Yds.
Class B Concrete	7,005 Cu. Yds.
Plain Steel Bars	1,222,941 Lbs.
Fabricated Structural Steel	2,129,000 Lbs.
Median Divider	21,318 Lin. Ft.

Copies of plans, specifications and other contract documents, including cross-sections, are on file and open to public inspection at the office of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on July 21, 1954. Plans, specifications, cross-sections and other contract documents will be available by this date for inspection or for mailing to prospective bidders. Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five ($5.00) dollars per copy. Copies of cross-sections may be purchased from the Pennsylvania Turnpike Commission for the sum of fifty ($50.00) dollars per set.

Plans and contract documents, for this section exclusive of cross-sections and specifications, may be purchased from the Pennsylvania Turnpike Commission for the sum of twenty (20) dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
July 15, 1954

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4208) will be received at Albuquerque, N. M., until August 26, 1954, for furnishing labor and materials for earthwork, clearing, and structures for rehabilitation of drains, BE-2 Unit, Middle Rio Grande Project, N. M. Location near towns of Los Lunas, Belen, and Bernado in Socorro County N. M. Principal items are clearing and cleaning approximately 37 mi. of drain; removing existing structures; constructing 21 canal and road culvert crossings 36 to 60-inch in diameter; and other work. Completion time 450 days. For particulars, address Bureau of Reclamation, Albuquerque, N. M.; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Department of Commerce, Bureau of Public Roads, July 13, 1954. SEALED BIDS will be received at the office of the Bureau of Public Roads, 214 Globe Building, 4th & Cedar Streets, St. Paul, Minnesota, until 11:00 a.m., C.S.T., AUGUST 13, 1954, for Minnesota Forest Highway Project No. 2-A2,B1, Chippewa National Forest, Cass County, Minnesota. 6.819 miles Grading, Draining and Bituminous Surfacing from Bena to Federal Dam. The approximate quantities of the more important items are 115,000 cu. yd. Excavation, 18,500 cu. yd. Gravel, 108,000 gal. Asphalt and 6,500 tons Bituminous Concrete. Minimum wage rates have been fixed as required by law. Plans, Specifications and Proposal forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. H. J. Spelman, Division Engineer.

CONTRACTORS
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for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

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CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

(Additional Position Vacant Ads on Page 70)

CONSTRUCTION SUPERINTENDENT — General Contracting firm in eastern West Virginia desires man with up-to-date experience in handling medium and large size building projects. The man we want must be cost conscious and have references to demonstrate that he has recently run jobs either in commercial or public building. Reply giving age, resume of experience and salary required. P-3155, Engineering News-Record.

WANTED: Instructor of Engineering Drawing and descriptive geometry. Salary up to $4,700 for 9 month period and assistant professorship for qualified person. M. E. graduate preferred. Dept. of Engr. Drawing, University of North Dakota, Grand Forks, North Dakota.

MALE HELP Wanted: Experienced Structural Draftsman. Personnel—Box 1087, Charlotte 1, N. C.

CITY ENGINEER—City of Montebello, California (pop. 25,000) invites applications. California registration with one year of experience in municipal government in administrative capacity. Salary range—$629-$703. Maximum age 65. Apply by September 1, 1954 to Personnel Officer, City Hall, 140 North Sixth Street, Montebello, California.

SALES ENGINEER, now calling on road building and construction trade to take on complete line of tractor replacement parts for engine and undercarriage, including track assemblies. P-3241, Engineering News-Record.

DEPUTY BUILDING inspection supervisor: Graduation from an accredited four year college with degree in structural or architectural engineering. Seven years of experience in the structural design of buildings and some experience in examination of plans and specifications of building projects and applications for building permits. Salary $5668-$6708 per year, complete details by writing to Director of Personnel, Municipal Building, Hartford, Conn.

STRUCTURAL ENGINEER: Graduation from a college or university of recognized standing with a degree in engineering, specializing in structural engineering, and 5 years experience in a responsible capacity involving design of all sizes and classes of buildings and structures or an equivalent combination of experience and training. Salary $5408-$6240 per year. Complete details by writing to Director of Personnel, Municipal Building, Hartford, Conn.

CIVIL ENGINEER — Registered or Graduate Public Works engineering. City engineering department. Annual Salary $4560-$5760. Personnel, Municipal Building, Hamilton, Ohio.

DRAFTSMAN WANTED experienced in detailing steel joists, metal windows and allied products. Position permanent, location New York City. State salary desired. P-3354, Engineering News-Record.

HIGHWAY STRUCTURAL Engineer for design work with a California county. Starting salary $483 with periodic step increases to $587. Paid vacation, sick leave, holidays, ideal working conditions, excellent retirement system. P-3326, Engineering News-Record.

CHIEF OF Party for California county. Starting salary $417 with periodic step increases to $507. Paid vacation, sick leave, holidays, ideal working conditions, excellent retirement system. P-3327, Engineering News-Record.

OFFICE ENGINEERING assistant for flood control work with California county. Starting salary $343 with periodic step increases to $417. Paid vacation, sick leave, holidays. Good working conditions. Excellent retirement system. P-3328, Engineering News-Record.

WANTED: CONSTRUCTION Engineer to aid in construction of shopping centers. Age preference, 30 to 45 years. Must be able to estimate, purchase, expedite and coordinate construction work. Good opportunity for person to work into permanent position with an established and growing construction company. P-3323, Engineering News-Record.

WANTED BY leading concrete form manufacturer in large midwest city, architectural engineer with concrete forming background. Needed for design and sales ability. Must have originality. Box No. P-3343, Engineering News-Record.

WANTED

Designing engineers, highways-thruways, bridges, airfields, drainage, sanitation, hydraulic, soil mechanics, structural.

Draftsmen, designers, to Project Manager.

Submit resume

SEELYE STEVENSON VALUE & KNECHT
101 Park Ave. New York 17, N. Y.

POSITIONS VACANT

POSITIONS OPEN for job superintendents or assistant superintendents. Excellent opportunity for young men under 32 years of age. Please give full statistical information in first letter. P-3339, Engineering News-Record.

SANITARY ENGINEER — some sewage and water system design experience preferred. Recent graduate considered. Write details to R. C. Gerhard, Personnel Division, H. J. Heinz Company, Box 57, Pittsburgh 30, Pa.

SELLING OPPORTUNITY OFFERED

SALES ENGINEER — Rochester, New York and Pittsburgh, Pennsylvania territories open with established national concern selling prefabricated metal products to engineering and construction markets. Positions are permanent and offer excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Ages 24 to 30. Car furnished. Complete training program. Salary and bonus. RW-2289, Engineering News-Record.

EMPLOYMENT SERVICES

OVERSEAS PROJECTS Guide to most active constructors-engineers, oil co's., gov't & UN groups hiring for foreign projects. Send $1. Cove-McKane Int., GPO Box 126E, NY 1, NY.

SALARIED PERSONNEL. $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

EMPLOYMENT AGENCIES

WANTED ENGINEERS, Designers, Draftsmen-Structural, Architectural, M.E., C.E., E.E., and Industrial, also Teachers and Chemists, Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT and Engineer with vast experience in housing projects, 22 years in construction. Man well qualified in cast reduction methods desires connection with firm building housing projects on small salary and bonus computed from cost saving. PW-2940, Engineering News-Record.

CIVIL—STRUCTURAL Engineer: thirty years diversified experience; planning, designs, specifications, supervision, office, field, steel, reinforced concrete, timber structures; power plants, oil refineries, airbases, site development, port facilities, hospitals, theatres, commercial sky scrapers. Includes six years overseas Europe, South America, Pacific. Foreign assignment preferred; available June 30. PW-3135, Engineering News-Record.

CONSTRUCTION ENGINEER: — Registered Civil Engineer, 15 years experience heavy construction. Now completing projects in West Indies, previous experience Middle East, Latin America. Desires permanent connection. Some Spanish, Arabic, French. Married status. PW-3144, Engineering News-Record.

CHIEF STRUCTURAL Engineer, 30 years, experience steel and reinforced concrete; 20 years design supervision. PW-3263, Engineering News-Record.

GENERAL OR Plant Manager—20 years experience in fabrication of steel for buildings, bridges, and special structures. Experience includes sales, engineering and supervision of engineering, production and field erection forces and purchasing. Excellent production record. Reg. Prof. Engr. Age 38. Desire position with progressive company in this field. PW-3239, Engineering News-Record.

(Continued on the following page)

ENGINEERS
Foreign Service

Graduate Chemical, Mechanical, Electrical & Construction Engineers with minimum of 5 years' experience. For specialized assignments commensurate with qualifications in various phases of construction, estimating materials and cost control, planning and refinery process work. Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 30

Arabian American Oil Company

505 Park Avenue, New York 22, N. Y.

BRIDGE ENGINEERS AND SPECIFICATION WRITERS

Civil Graduates of accredited U. S. colleges. Must have not less than the following experience:

Detailers—2 years structural steel or reinforced concrete detailing.

Designers—5 years responsible work on structural steel and concrete including work on long span bridges.

Squad Leaders—3 years responsible charge of squad on structural steel detailing.

Specification Writers—With design and field experience for writing specifications for steel bridges, concrete structures, and highway construction.

Please mail complete resume together with salary required to:

Howard, Needles, Tammen & Bergendoff
55 Liberty Street New York 5, N. Y.

SPECIFICATION WRITERS BUILDING CONSTRUCTION

for California State Division of Architecture. Requires 4 to 5 years' architectural experience including drafting, inspection, and writing specifications for major buildings plus college degree in architecture. Additional experience accepted in lieu of college degree. Starting salaries $5,772 and $6,360 with yearly raises. Interview and civil service examination in California only.

STATE PERSONNEL BOARD
1015 L Street, Sacramento 14, Cal.

CONSTRUCTION ENGINEER

Man under thirty years of age, preferably with at least one year's experience, for general construction work. Excellent opportunity for rapid advancement. State age, experience, availability and full particulars in first letter.

P-3183, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SUPERINTENDENT

Wanted in East—must have references that he has recently supervised for Contractors, large Bridge and Highway Contracts and knows costs. Give age, experience, salary required and availability.

P-3404, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

OPPORTUNITY

For an energetic engineer with sales personality

25 to 35 years of age, for sales work with company operating on nationwide basis furnishing Concrete Form Engineering and Rental Service. General construction experience and some Engineering college training essential. Give full details in first letter to

R. P. Wilkinson, Economy Forms Corp.
4301 N. E. 14th St., Des Moines 13, Iowa

SALES ENGINEER MACHINERY, EXPORT

Manufacturer construction, mining equipment seeks sales engineer about 35 with experience selling heavy machinery overseas for So. Africa & Belgian Congo. Mechanical or electrical engineering education or training necessary. Knowledge of French desirable. Must undertake thorough training program before going overseas. Single man preferred. If married give family details. Send full particulars, including photo if available. Salary, commission.

HARNISCHFEGER OVERSEAS CORP.
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ASSISTANT QUARRY SUPERINTENDENT

Outstanding opportunity for experienced quarry engineer to assist in operations and management of Midwest's largest producer of sand and gravel. Minimum of 5 years experience in field operations and engineering degree required. Excellent promotional possibilities. Age to 40. Reply enclosing snapshot if available, personal, education, business background, and salary required.

P-3204 Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

PROJECT ENGINEER

Nationally known manufacturer desires a project engineer under 40 (M.E. Degree) to assume top engineering position in its Tin Can Division.

Must have at least 5 years experience in most all phases of Tin Can Manufacturing such as designing, layout and can machinery operation. Knowledge of can machinery desirable.

Will have charge of designing, layout and installing of tin can machinery in present can plants as well as new tin can plants. Here is an excellent, permanent position with promotional opportunity for a qualified engineer.

Please state age, education, experience, salary desired and other information.

P-3360, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ESTIMATOR WANTED

Must have recent experience in all phases of heavy construction, for Philadelphia. Reply by giving age, reference, salary desired and when available.

P-3403, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

Construction Superintendent experienced on large scale rolled earth fill dam.

B. PERINI & SONS, INC.
FRAMINGHAM, MASS.

POSITIONS WANTED

(Continued from preceding page)

CHIEF ESTIMATOR—35 years practical experience, field and office, engineering education, progressive and receptive to new ideas, specializing in reinforced concrete masonry structures, mostly buildings, and with the ability, knowledge of costs and judgment necessary to meet present competition and stay in business. Expect to retire in five years and will train replacement in costs and business management. Now employed but wish to make change in locality with an aggressive responsible contractor. PW-3288, Engineering News-Record.

GENERAL SUPERINTENDENT 25 years experience, thorough knowledge all phases construction work. Consisting road, railroad, airport, heavy excavation, iron ore stripping, iron ore producing, dams, levees, large solid rock excavations, supervision and maintenance of all types of construction equipment and estimating. Available about July 15th. Will accept position anywhere, references available. PW-3281, Engineering News-Record.

PROJECT MANAGER or Contractor's executive available. Broad experience heavy construction and buildings. Thorough organizer. Sound knowledge of field supervision, estimating, cost control, purchasing, subcontracts. New York preferred. PW-2942, Engineering News-Record.

GENERAL SUPERINTENDENT. Over 25 yrs. heavy construction experience. Qualified to take full responsibility of projects of any type or size. Good background, know men and equipment, available any location immediately. PW-2466, Engineering News-Record.

CONSTRUCTION OR Sales Engr. 29 B.S.C.E. 5 yrs. experience on Municipal work, Sewerage treatment, water treatment, earth fill dams, highways and pipeline work. 2 years of administrative work. 1 year of sales management work. Only responsible positions considered. PW-3337, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT: Desire position with sound company in heavy construction. Experienced on Super-highways, pile driving, harbor work. Familiar with all type earth moving equipment. PW-3338, Engineering News-Record.

PROJECT MANAGER - SUPERINTENDENT: C.E. 20 yrs. experience heavy industrial, pipeline, gas compressor stations, highways and hydro-electric projects. Aggressive growth individual and a go-getter. Believe in finishing projects on time. Presently employed. Available Sept. 1st. Interested primarily in foreign assignment. Excellent references. Working knowledge Spanish and Turkish. PW-3294, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT Mechanical and Structural Engineer, can take full charge of project including all related trades on heavy or light construction. Want responsible position with general contractor or architectural firm. Prefer south or southwest. Very good references. PW-3306, Engineering News-Record.

CONSTRUCTION ENGINEER or Superintendent, age 41, 18 years varied construction experience, last six years steam electric power plants, desires association with firm in New Orleans-Mobile area. Presently employed in Texas. Available late August-Sept. PW-3304, Engineering News-Record.

CHIEF ENGINEER or Project Engineer. Registered structural and professional Engineer, and Architect. 25 years experience on Industrial and Commercial structures. PW-3330, Engineering News-Record.

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POSITIONS WANTED

ASPHALT PAVING engineer-inspector experienced all phases quality control including plant, lab, and laydown. PW-3331, Engineering News-Record.

RESIDENT ENGINEER or Project Manager, man with 25 years experience on highways, expressways and airports will be available in near future for work with consulting engineers or contractor. Experience covers concrete structures, drainage, grading and concrete and asphalt paving. Can supply other experienced personnel. PW-3332, Engineering News-Record.

CONSTRUCTION EXECUTIVE. Engineering background, 29 years experience in design, estimating and construction supervision, all types building, harbor, and heavy construction. New York area preferred. PW-3319, Engineering News-Record.

ARCHITECTS SUPERINTENDENT — Available soon. Long experience. Box No. PW-3324, Engineering News-Record.

HEAVY CONSTRUCTION supt. extensive experience on rock blasting, earth moving, and concrete. PW-3329, Engineering News-Record.

CONSTRUCTION ENGINEER, C. E. graduate, 20 yrs. experience, commercial bldgs., power plants, sewer & water construction, field & office. Presently employed. Wishes to relocate in Eastern States. PW-3341, Engineering News-Record.

ENGINEER BCE now studying for MCE (Transportation and soils). 4 yrs. experience in traffic, airports, soils wants interesting position in transportation or soils field in New York City. PW-3355, Engineering News-Record.

CIVIL ENGINEER, BSCE and MSCE, Structures Major, Age 29, Married, Reg. Professional Engineer. 1 year Structural Design, 3 years varied field and office experience as engineer and estimator for construction company on commercial, industrial, and institutional construction. Presently completing 2 years field and office experience in light and heavy construction as Resident Officer in charge of Construction in Navy with rank of Lt (CEC) USNR. Desires challenging position with an aggressive consulting firm doing thin shell and prestressed concrete design. Available in October. PW-3348, Engineering News-Record.

GEN. SUPT. 38, 26 years experience heavy construction, Industrial, Dams, Roads, Bridges, Airports, Disposal plants, Tunnels, Water & Sewage systems, Cofferdams. PW-3347, Engineering News-Record.

SOILS ENGINEER 30 married, reg. Civil Calif. 6 years experience all phases soil mechanics and foundations. 3 years supervisory and administrative. PW-3346, Engineering News-Record.

CONSTRUCTION SUPT. over 20 years broad experience—Industrial, institutional groups, commercial and schools. Engineer. PW-3372, Engineering News-Record.

PROJECT MANAGER—Construction Superintendent and Engineer. 15 years experience industrial plants, land and marine pile driving and heavy construction. Age 39. Presently employed as General Superintendent large construction company. Desire to make change. Good references. Available two weeks notice. Box PW-3375, Engineering News-Record.

CONSTRUCTION COST Accountant, BS degree, now employed in Richmond, Va., desires to relocate to Baltimore, Md. area. Experienced in construction cost, purchasing, & estimating. Reply PW-3370, Engineering News-Record.

BUSINESS OPPORTUNITY

Drawings, Details, Job forms, clippings, testimonial letters, experience histories reproduced 8½ x 11. Job Photo-Penni-Prints 2000—$20. Easily folded for mailing. Free estimates. Penniprint Co., Dept. 18, Box 1159, Chicago 90.

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1 10FD 15-ton Euclid $5,500.
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1 20TD 22-ton Euclid $14,000.
1 8TD 22-ton Euclid $14,000.
10 8TD 22-ton Euclids $11,000 each.
6 1TD 22-ton Euclids $5,000 each.

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6 43FDT 13-yd Euclids $7,500 each.
3 38FDT 13-yd Euclids $7,000 each.

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1 14TDT 15.5-yd Euclid (lever type) $23,900.
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WANTED

WANTED

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W-3198, Engineering News-Record
330 W. 42 St. New York 36, N. Y.

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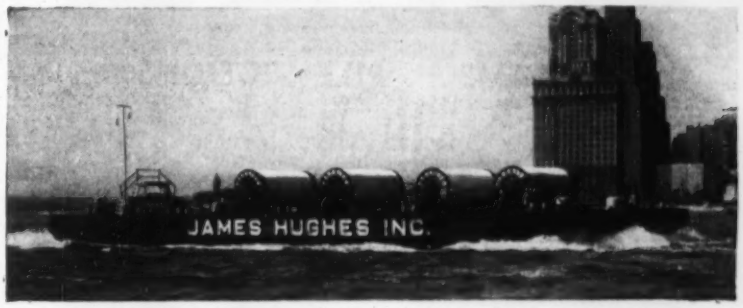

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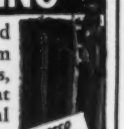

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The crawlers are 18 in. wide and measure 7½ ft between sprocket centers. Cleated pads, a ground pressure of 6.3 psi and precise balancing of the equipment weight at the center of the crawlers are said to make the trencher very effective in most terrain situations.

The 240's digging wheel employs 3 in.-dia front upper truck that carries the load of the wheel and is reported to add life to segments, sprockets, shafts, etc.

Three optional bucket sizes give the Model 240 a trench-width ranging from 20 in. to 36 in.

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First Speed	**.5**	**.7**	**1.1**	**1.5**	**2**	**2.7**	**3.4**	4.6	5.8	12	22.1	37.3
Second Speed	**1.1**	**1.5**	**2.3**	**3.1**	**4.1**	**5.6**	**7**	**9.5**	12.1	24.9	45.8	77.2
Third Speed	**2**	**2.7**	**4.1**	**5.6**	**7.5**	**10.3**	**12.7**	**17.3**	**22.1**	45.5	83.7	141.1
High Speed (ordinarily used when digging)	**3.4**	**4.6**	**7**	**9.5**	**12.7**	**17.3**	**21.5**	**29.3**	**37.3**	77	141.4	238.4
Reverse (not used when digging)	.4	.6	.9	1.2	1.6	2.2	2.8	3.7	4.8	9.8	18.1	30.5

Hoist unit designed for pick-ups

A new "Low Mount" hydraulic hoist has been designed for use on standard ½, ¾ and 1-ton pickup chassis. Designated the Model 3316 TP Hoist, the unit is engineered for quick installation with a simplified kit of mounting brackets. The twin cylinders are low slung between the chassis frame to permit a lift point well ahead of the body hinges. The 450-lb unit has a maximum capacity of 6,000 lb and is available with power take-off or electric drive. Perfection Steel Body Co., Galion, Ohio.

Compact unit plots two independent variables

The Librascope X-Y Recorder is designed for use wherever it is necessary to depict graphically for analysis one independent variable in terms of another.

A general rather than special purpose unit, the plotter accepts binary or decimal coded digital inputs as well as continuous analog inputs.

Three standard converters are available: decimal keyboard, decimal punched card and binary coded for computer use. Other design modifications can be made to meet specific requirements.

The plotter-recorder uses a unique floating gear train to produce accurately the continuous curves and discrete points.

The equipment accepts positive or

(Continued on page 80)

"BIG STEEL"

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Karnak®

WATERPROOFING PRODUCTS

Fairless Works of United States Steel Corporation's plant at Morrisville, Pa., on the Delaware River, is the country's largest single steel construction project undertaken at one time. Waterproofing done by Lewis and McDowell, Inc., New York City.

When permanent waterproofing was wanted on the foundation of U. S. Steel's new "Fairless Works," Karnak was chosen by the contractor. The world's most modern steel mill called for the best in all materials. That's why 750,000 yards of Karnak were used to protect against water, wherever there was a hydrostatic head.

Why Karnak? Because it has the Membrane System of waterproofing *that holds secure* against hydrostatic head or any water condition.

The secret to the extreme water resistance is the Karnak Membrane Fabric. Open Mesh Cloth, specially woven of long-fiber cotton is carefully saturated with highly refined asphalt so as to leave the mesh open. When this fabric is layered on the job with alternate moppings of liquid asphalt, it provides a tough, thoroughly waterproof membrane that resists cracks, abrasion and settling to maintain water resistance through the life of the structure.

The Karnak system is also the best for roof patching, skylight flashing, window and door flashing, through-wall and cornice flashing, as well as waterproofing against a hydrostatic head in dams, swimming pools, viaducts and tunnels...***Lewis Asphalt Engineering Corp., 30 Church St., New York 7, N. Y.***

Save money with Karnak

Karnak Fabric is packed in sturdy corrugated cartons for protected shipping and storage. It is non-sticking, unrolls easily to the very end... "works" faster, with no waste. Rolls are available in 4", 6", 9", 12", 18", 24", 30", 36" widths...or special sizes to fit your requirements.

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negative values on both axes and the origin may be located anywhere on the paper chart. Either 11 x 16½-in. or 8½ x 11 graph paper can be used —pen overtravel or ⅛ in. on all borders is allowed for convenience of pen positioning. Plotting area is 10 x 15 in.

A small pressure regulator has been employed to control the ink flow and the system is reported to work well even under the conditions of variable elevation of the point.

The chart paper and developed curve or points are continuously visible to the operator. The drawing surface is a 120 deg. concave cylinder and is illuminated.

Accuracy is within 0.1 per cent full scale for point plotting (static) and 0.5 per cent at 8 in. per sec for continuous inputs. Response is rated at one second full scale in either axis. LIBRASCOPE, INC., 1607 FLOWER ST., GLENDALE, CALIF.

Double grouser shoes are designed for rugged service

Crawler tractor owners using their machines on rock and other hard surfaces may now purchase double grouser track shoes for Caterpillar D8 tractors.

In areas where the tractor is working in blasted rock, the track shoes often suffer from extreme wear due to track slippage and also from bending which causes ultimate failure. The double grouser shoe is designed for a considerably greater resistance to bending—about three times that of former types.

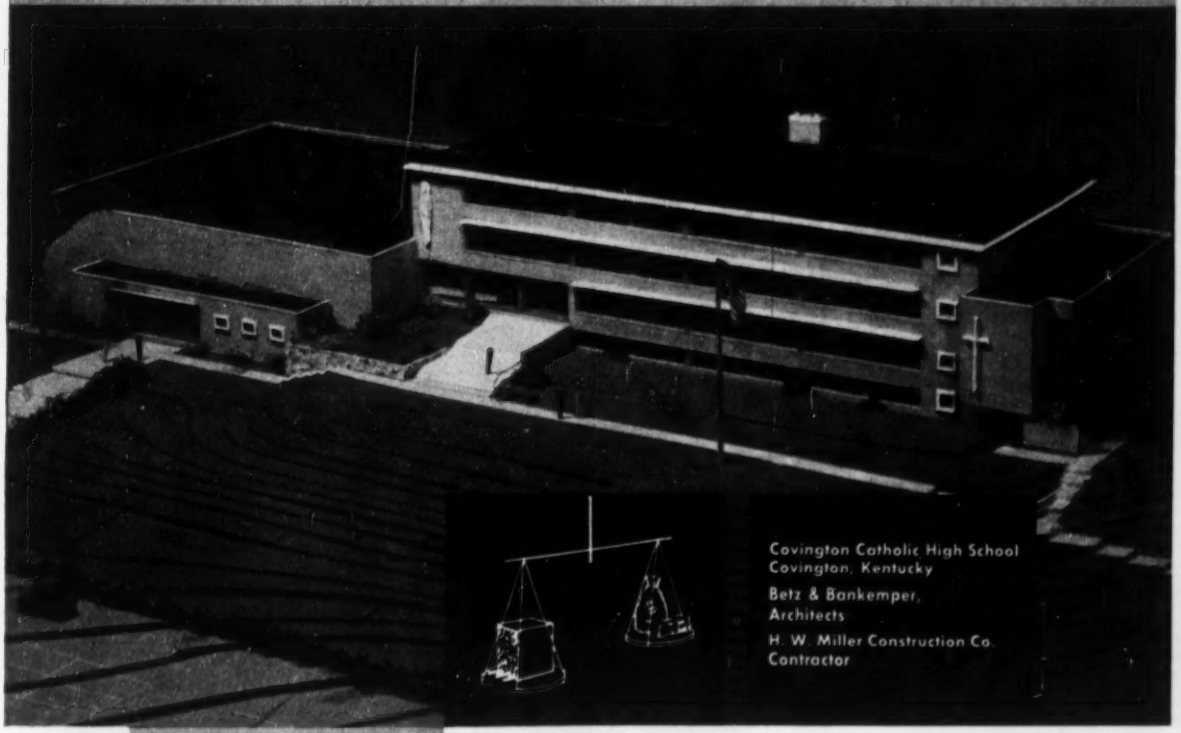
This increased resistance is accomplished by having the two parallel grousers lower in height but wider than the single grouser shoe. There is

(*Continued on page 82*)

A comparative cost analysis of a typical bay (16′ wide x 61′ long x 4 floors high) in this school building showed that flat plate reinforced concrete, with columns cast in round forms, was $1300 less expensive than other conventional types of construction. This saving helped attain an average cost of only $11.77 per sq ft. Furthermore, according to the architect, reinforced concrete gave ". . . the best fireproofing" and ". . . a structure that will take severe abuse without springing or deflecting."

Reinforced concrete structures also save money by saving erection time. Work can start sooner, because all construction materials are available locally in a matter of days instead of months. In addition, reinforced concrete can be erected faster than other types of structures. Take advantage of reinforced concrete on your next job.

cost analysis shows flat plate REINFORCED CONCRETE saves $1300 per bay!



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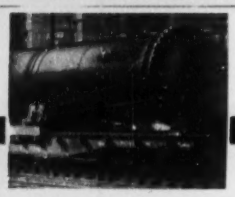

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We also design and fabricate elevated tanks, acid tanks, dye vats, digestors, standpipes, storage tanks, etc. Write for latest Cole catalog—"Tank Talk."

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TANKS • TOWERS • VESSELS
CYLINDERS

more metal at the edge of the shoe covering the hinge joint. Likewise the body of the shoe is made thicker.

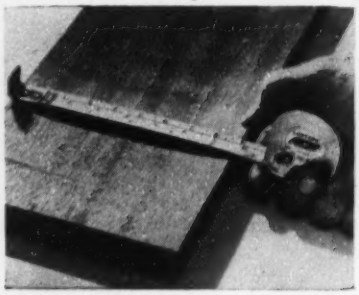
The second grouser at the midsection of the shoe provides protection for the track shoe bolt heads so that they are not subjected to pounding and eventual loosening.

The double grouser is designed specifically for situations where the rate of wear is extremely high due to track slippage in rocky footing. The design is not recommended for normal soil conditions where good penetration is the paramount requirement. Further, field tests have proven the double grouser shoe to be hazardous on steep side hill work in rock or frozen ground since it presents a wide area with low penetration and resulting side slip. CATERPILLAR TRACTOR CO., PEORIA, ILL.

Pocket-size rule gives readings in board-feet

The Lumtape is said to be the first lumber measuring device that can be carried in the pocket, available at all times for on-the-spot measurements. It has a high potential for quick estimation of board-footage required in construction work.

The rule is calibrated for even and odd lengths up to 16 board-feet and it can be extended a full 10 ft for checking lengths. Standard $\frac{1}{8}$-in. markings extend the usefulness of the measuring device.



The tape sells for $5.50 each, $5.00 in sets of four. Replacement blades are available for $2.50. LUMTAPE CORP., P. O. Box 614, HILLSIDE, N. J.

Nygen tire fabric gets wider usage

Nygen fabric, said to be the strongest ever devised for tire carcass construction, is now being used in the manufacture of all large-sized General tires.

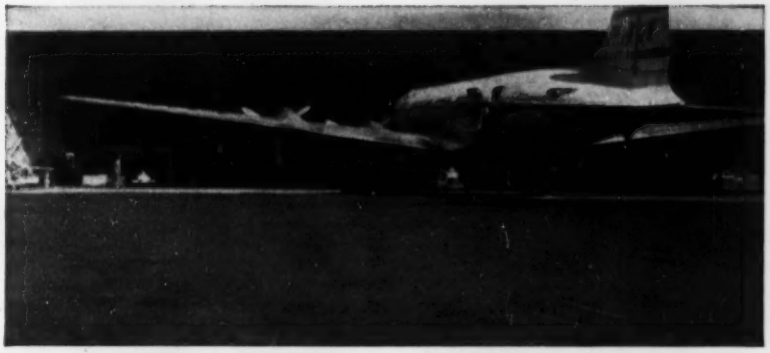
General first introduced Nygen in truck tires last year and followed with use of the fabric in passenger tires at the start of 1954. The high-strength synthetic now replaces rayon in tires

(*Continued on page 84*)

Angledozer available for small tractor

The No. 61 Bulldozer has been designed for use with John Deere "40" crawler tractors. By changing two bolts the blade can be angled 11½ and 25 deg to right or left or it can be used straight. The 6-ft blade has a replaceable ¼-in. cutting edge and is contoured for easy operation. Operating range is 5 in. below ground level to 18 in. above. Total weight is 777 lb. John Deere, 400 19th St., Moline, Ill.

Aircraft fueling area sealed for less than 6¢ per sq. ft.



...with COLFIX® JET SEAL

10,000 sq. yds. of Hanger Apron and Fueling Area for Pan American Airways Corporation at the Seattle-Tacoma International Airport were recently sealed with Colfix Jet Seal—for protection against wear, weather and solvent action of fuels.

This job was let at a contract price of under 6¢ per sq. ft. Work began with cleaning of the area, followed by a rapid squeegee and broom application of diluted Colfix Primer. This method assures good bond even to a dusty surface, and gives added insurance against fuel transmission in vapor form.

Seal Application

Following the prime, Colfix Jet Seal, mixed with some water to free-flowing consistency, was applied with rubber-faced squeegees. Three applications were made in order to get smooth, uniform coverage of one quarter gallon per square yard (based on the material as received in the container). Each squeegee application was brushed immediately and the area opened to traffic as soon as the Jet Seal had set.

For Safety ... and Long Life

Colfix Jet Seal embodies a coal tar base and oil-proof elastomers that provide an enduring solvent-resistant seal for all bituminous pavements. Its value has been proved on numerous airport runways, parking areas and hard-stands where it effectively protects these surfaces against the solvent action of gasoline and aircraft fuels. In addition, it provides a durable, skid-proof surface that resists heat and weathering.

Colfix Jet Seal is a "bodied" product that fills surface voids. It requires no sand cover. Jet Seal is one of the easiest materials to apply by squeegee, brush or industrial spray equipment. It sets rapidly and the sealed surface may be opened to traffic with a minimum of delay.

For full information on Colfix Jet Seal call our office nearest you.

Here's another typical Colfix Jet Seal job at Baltimore's Friendship International Airport.

Colfix Jet Seal is made by the makers of Walk-Top and Wearcoat—protective coatings for Playgrounds and Tennis Courts used successfully for over 20 years.

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The Preload Company, Inc. introduced prestressed concrete to the United States in 1935 and has been responsible for the design and construction of most of the major prestressed concrete structures built to date in the U. S.

Over 50 patents and patent applications relating to prestressed concrete, which offer many advantages to the licensee, are owned or controlled by Preload.

Licenses are also available in foreign countries, under corresponding Preload patents, in those countries in which Preload affiliated companies are not yet established.

Inquiries are solicited from responsible firms interested in prestressing in the field of construction service, contracting, or concrete product manufacture, and should include designation of territory, general description of organization and business activity, and a recent financial statement.

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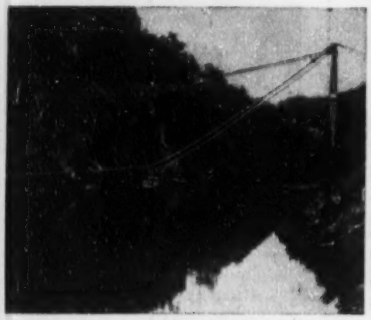

Slackline builds cofferdam across river gorge.

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One man controls . . . a Sauerman Slackline or Tautline Cableway . . . that can reach out 1,000 ft. or more. The Slackline is unexcelled for deep digging, especially under water. The Tautline is best for long range aerial crane work.

Sauerman machines lift, haul and dump any bulk material. Installations span pits, ponds, rivers or canyons. Slackline sizes: ⅓ to 3½ cu. yds. Tautlines: up to 25 tons. Operation cost: just a few cents per cu. yd. handled. Consult Sauerman engineers for specific information on your particular requirements.

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In addition to load-carrying and shock-absorbing qualities, the new cord is said to possess great water resistance. This is particularly important where tires are subjected to cutting action and subsequent immersion. Deterioration caused by water absorption is reported cut to a minimum. THE GENERAL TIRE & RUBBER CO., AKRON, OHIO.

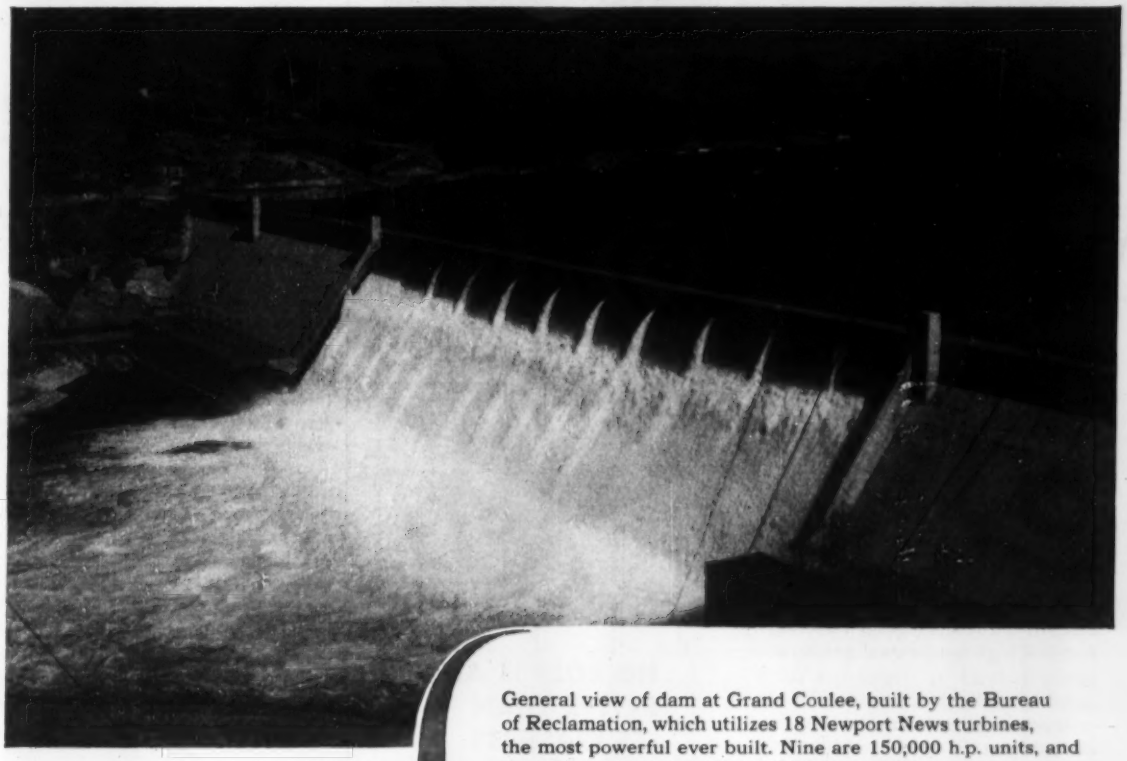
Portable machine makes on-the-job concrete tests

A new portable testing machine makes possible on-the-job testing of concrete and similar materials with laboratory accuracy.

Simple to operate, the machine develops loads up to 200,000 lb by means of a two-speed, hand-operated two-speed concentric pump that actuates the piston of the main hydraulic system. The equipment includes a large direct reading gauge and a maximum load pointer.

Standard 6-in. dia concrete cylinders 12 in. high are accommodated in the normal machine setup. Variations in specimen height are easily compensated for by adjusting the upper platen to position.

The equipment is convertible to a 20,000-lb capacity flexure testing machine for beam tests. The flexure attachment includes the transverse beam loading apparatus and a large diameter 20,000-lb capacity direct reading gauge. Beams up to 42 in. in length can be tested and either center or third point loading can be used. SOILTEST, INC., 4520 W. NORTH AVE., CHICAGO 39, ILL.



General view of dam at Grand Coulee, built by the Bureau of Reclamation, which utilizes 18 Newport News turbines, the most powerful ever built. Nine are 150,000 h.p. units, and the other nine are rated at 165,000 h.p. each.

Specialists . . . in building Water Power Equipment

Turbines designed and built for the world's largest development at Grand Coulee... and for other hydroelectric installations in America and various parts of the world... bespeak the skill and facilities offered by Newport News.

This trained organization has filled hydroelectric turbine contracts with an aggregate rated output of 7,000,000 horsepower.

Other equipment designed and built by Newport News includes penstocks, pressure regulators, valves, pumps, gates and rack rakes. Upon request, a copy of our illustrated booklet entitled "WATER POWER EQUIPMENT" will be sent to you.

Typical Users of Newport News Equipment

PLANT	LOCATION
Boone	Tennessee
Buchanan	Texas
Caonillas	Puerto Rico
Chief Joseph	Washington
Clark Hill	South Carolina
Deer Lake	Newfoundland
Folsom	California
Fort Patrick Henry	Tennessee
Hiwassee	Tennessee
Hoover	Nevada
J. H. Kerr	Virginia
Jim Woodruff	Florida
Lower Salmon	Idaho
Norris	Tennessee
Rock Creek	California
Santee-Cooper	South Carolina
C. J. Strike	Idaho
Whitney	Texas
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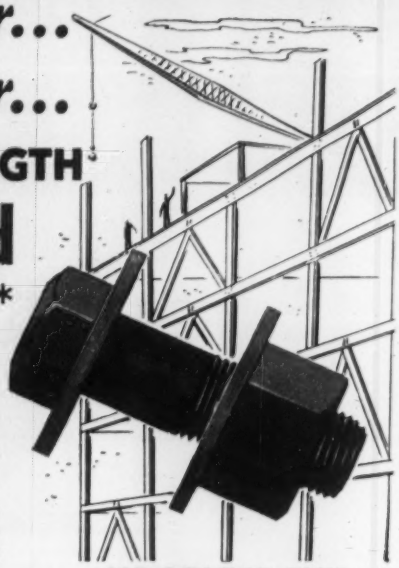

According to leading authorities in modern Structural Steel Framing Practice, high tensile steel bolting of joints instead of riveting, offers erecting contractors and owners of such structures a number of definite advantages:

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- A bolted building or bridge can be completed sooner than a riveted structure.
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- High strength bolts of the same diameter may be substituted for rivets without reduction in size of holes.
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- Bolted Construction is QUIET — especially desirable for building new wings to hospitals or for construction in "quiet zones".
- High Strength Bolts have higher strength than comparable rivets.
- High Strength Bolted Joints provide 25% higher fatigue resistance than comparable rivet joints.
- Bolted Construction is economical due to lower cost of structural jointing.

Build *better* and *faster* with High Strength Bolting of structural steel joints ... but remember that NO BOLT IS ANY BETTER THAN ITS WASHERS.

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For uniformly sound construction, specify MIL-CARB Carburized Washers.

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PUBLICATIONS

Water treatment—To explain the more than a dozen variations in water treatment processes the Rohm & Haas Co. has compiled a 24-page booklet entitled "If You Use Water". Liberally illustrated, the booklet discusses the fundamentals of the three major classifications of industrial water treatment based on ion exchange: softening, dealkalization and deionization. The advantages of the various water treatment methods are discussed and interpreted in terms of the application in specific industries. ROHM & HAAS CO., RESINOUS PRODUCTS DIV., WASHINGTON SQ., PHILADELPHIA 5, PA.

Barges—Welded steel barges for river and harbor use are described in a new 28-page illustrated booklet. One section is devoted to descriptive data and pictures of deck barges used by sand and gravel trade and construction industries to transport large tonnages of cargo to terminals along inland and coastal waterways. DRAVO CORP., ENGINEERING WORKS DIV., NEVILLE ISLAND, PITTSBURGH 25, PA.

Quarry tile—Information on quarry tile and its use is contained in loose-leaf form in a new publication. It is hoped that it will be useful as a file for specifications and source material. In addition to this, holders of the data file will be supplied with periodic additions that will include typical and unusual installation pictures and reports of new products and new developments. SUMMITVILLE TILES, INC., SUMMITVILLE, OHIO

Steam generation instrumentation — Bulletin 9050, "Instrumentation for Steam Generation" serves as a convenient, one-source reference for all Honeywell products applicable to steam generation. The bulletin should prove useful in selecting instrumentation for modernization programs of package boilers. MINNEAPOLIS-HONEYWELL REGULATOR CO., STA. 64, WAYNE & WINDRIM AVES., PHILADELPHIA 44, PA.

Sump pumps — A new 20-page BJ Sumpmaster Bulletin details the means for selecting any of 4,000 or more sump pump models. Complete dimensions and outline drawings are included and a simple coding system permits ordering without detailed description. Pump capacities range from 10 to 2,600 gpm with heads from 20 to 300 ft. Bulletin No. 54-3-1420. BYRON JACKSON CO., LOS ANGELES 54, CALIF.

Hard-surfacing—A really valuable addition to your library of manuals will be a new publication providing complete information as to type of alloy to use, preparation, welding and finishing procedures for hard-surfacing equipment parts. The 45-page looseleaf manual is divided into seven sections covering equipment commonly used in dredging, earth moving, cement, brick and clay, etc. Alloy recommendations and welding procedures are based on "job-tested" usage of latest accepted alloys and methods. A preface describes the manufacturer's line of alloys for acetylene and manual or automatic arc welding. VICTOR EQUIPMENT CO., ALLOY ROD & METAL DIV., 11440 S. ALAMEDA ST., LOS ANGELES 59, CALIF.

Transit pressure coupling—Ring-tite, the new coupling for Transite pressure pipe, is the subject of a 6-page illustrated folder. The publication shows how the coupling goes together, points out installation time savings, explains economies in service and cites typical uses in various parts of the United States. Data on sizes and weights is included and the folder gives basic information on the Transite asbestos cement pipe with which the coupling is used. JOHNS-MANVILLE, 22 E. 40TH ST., NEW YORK 16, N. Y.

Cranes — Heavy-duty Lorain motocranes and self-propelled cranes in the 524 series are featured in a new 20-page descriptive catalog. Detailed design and construction views along with on-the-job photos highlight the booklet. THE THEW SHOVEL CO., LORAIN, OHIO

Concrete forming—A new 8-page bulletin describes the use of Masonite Concrete Form Presdwood, a forming material. The use of the material is said to assure a smooth, finished concrete surface free from irregularities, disfigurements or markings. The booklet includes sections on specifications and physical characteristics. MASONITE CORP., 111 W. WASHINGTON ST., CHICAGO 2, ILL.

Pressure-treated wood—"Baxco Chemonited Forest Products" is the title of a new 32-page brochure that tells a comprehensive story of pressure treated wood, its value and uses in many fields of industry. J. H. BAXTER & CO., 200 BUSH ST., SAN FRANCISCO 4, CALIF.

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EDITORIALS

The President's highway program

IT HAS BEEN MANY A YEAR since a President of the United States spoke out forcibly in favor of a stepped-up and adequate roadbuilding program. But President Eisenhower did just that last week in an address he prepared for the State Governor's Conference. And in doing so he upheld his reputation for supporting issues of national necessity regardless of their political undertones. For it was known that many of the governors—powerful politicians all—favor less rather than more federal "interference" in roadbuilding.

In our view the President's espousal of large-scale highway improvements is as beneficial to the nation as any one thing he could have done, regardless of the many pressing issues—foreign and domestic—awaiting his attention. And it is to be hoped that those governors who so quickly but vaguely viewed with alarm will eventually see it the same way. The President's leadership should be welcomed, not rejected; his statesmanship in urging "a cooperative alliance between the federal government and the states" praised, not ignored.

The four-point program that the President proposed contains nothing entirely new. It could not be expected that it would. Actually, readers of *Engineering News-Record* will recognize several parts of the program as having been urged on this page during the current year, and will recall that the most revolutionary one—for the federal government to advance funds or guarantee the obligations of localities or states for highway expenditures—appeared here for the first and only previous time in the Feb. 4 editorial entitled "An RFC for roads." The important fact now is that the President has combined them into a recommendation, and given them stature by his voice.

His proposal for "a grand plan for a properly articulated system" strikes at what two previous editorials in this space have called a basic fault in the present situation, wherein state highway departments, toll road authorities and city governments are going their own ways without integration, and largely without anything more than piecemeal goals. "Self-liquidation of each project where that is possible" also makes good sense; some necessary projects will not qualify, but they should at least be subjected to this measure of their worth. And it is completely unreasonable—especially for state governors—to balk at "federal help where the national interest demands it" or to frown on "a program initiated by the federal government with state cooperation for the planning and construction of a modern interestate highway system."

There is much to be said in favor of states' rights and against dictatorial federal power, but "cooperation" need not end in dictation, and central leadership and coordination are necessary to protect and enhance the great national asset represented by our highways.

This fact becomes more apparent when an attempt is made to name a figure for the expenditures that will be required to bring our highways up to adequate standards. No matter whose estimate is used the amount is of such magnitude that all avenues of financing must be used—federal, state, city and private.

Quoting "experts," the President mentioned "$5 billion a year for 10 years, in addition to current normal expenditures." By so doing he may have imparted a magic aura to this figure that will be hard to dispel should it prove either beyond our financial means or below our actual needs. With respect to needs, however, it must be admitted that the figure is up with the top estimates that have been made, if it actually is "in addition to current normal expenditures." In that case, instead of the $5.4 billion spent on roads by all levels of government in 1953, of which about one-third was for maintenance, the President's program for future years might well bring total road expenditures up to $9 billion—$7 billion for construction and $2 billion for maintenance.

Since we are so far from that level now, however, such figures merely serve to emphasize the magnitude of the problem, and should not be regarded as final. In the meantime, while the limits of necessary expenditures are still subject to debate, the need is imperative for integrated planning and for the development of new means of sound financing—in short a "grand plan" as the President describes it. The sooner we get going on it the better. The President has pointed the way with his recommendation of a cooperative alliance among the federal, state and local governments.

Caution warranted

IN URGING CONGRESS to delay authorization of the Upper Colorado power and irrigation projects until the Hoover Commission's water resources task force has reported, the ASCE Board of Direction has acted in the public interest. The project for development of the Upper Colorado is so vast—with cost estimates running as high as one billion dollars—that Congress should know in detail what is involved. It should also know what each element will cost—as well as what return each can reasonably be expected to produce—before the initial steps are authorized. All this is especially important in view of the fact that the economic justification for some elements of the project has been widely questioned.

Also, the legislation now before Congress might establish policies which are directly contrary to the principles of any national water policy that the task force may recommend. Once the water resources report is on record, Congress will then be in position to follow or disregard it, as it sees fit.

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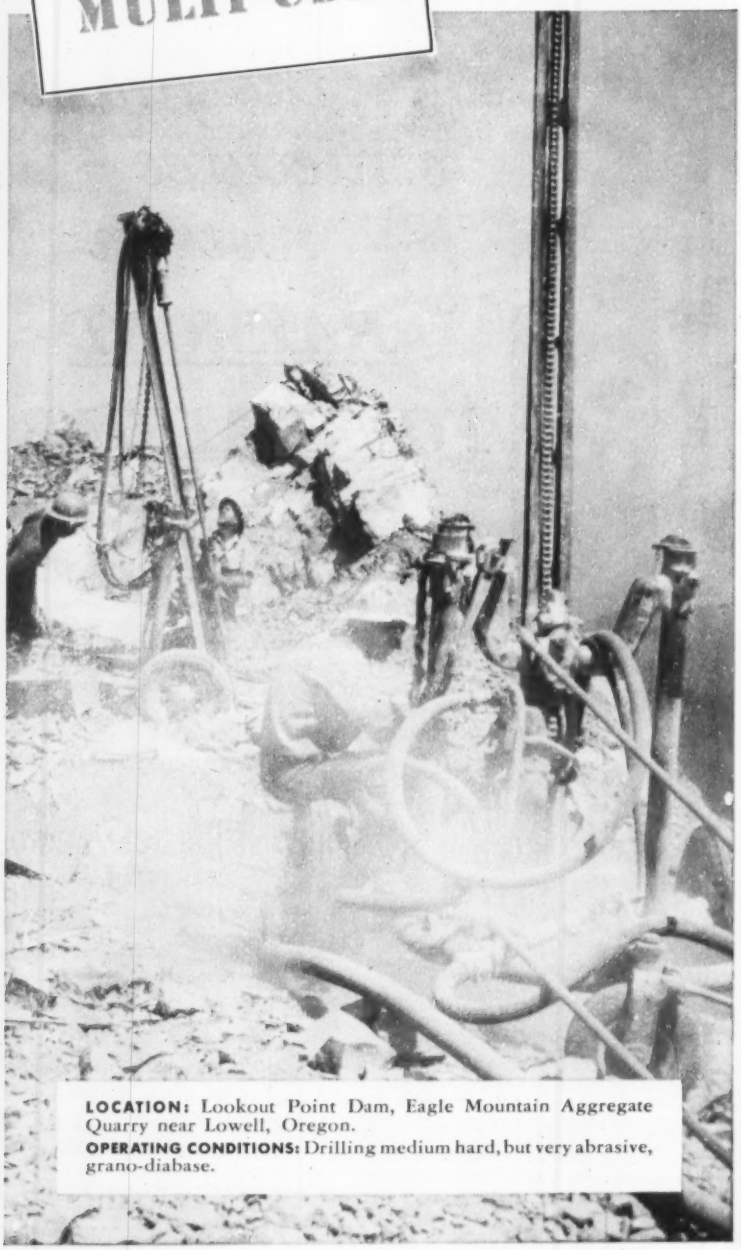

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